

National Grid SA-CO **PRODUCTION FILE**

Contractor : ABB Contracting Co.

Project : SS 8709- 132/13.8kV in Alkha

Contract No : 11131113/00

Substation : 8709

**Subject : 132kV SS 8710 UGF (+R03.1
Relay panel-1**

ABB

National Grid SA-COA

PRODUCTION FILE

Contractor : ABB Contracting Co.

Project : SS 8709- 132/13.8kV in Alkharj City

Contract No : 11131113/00

Substation : 8709

**Subject : 132kV SS 8710 UGF (+R03.2)
Relay panel-2**

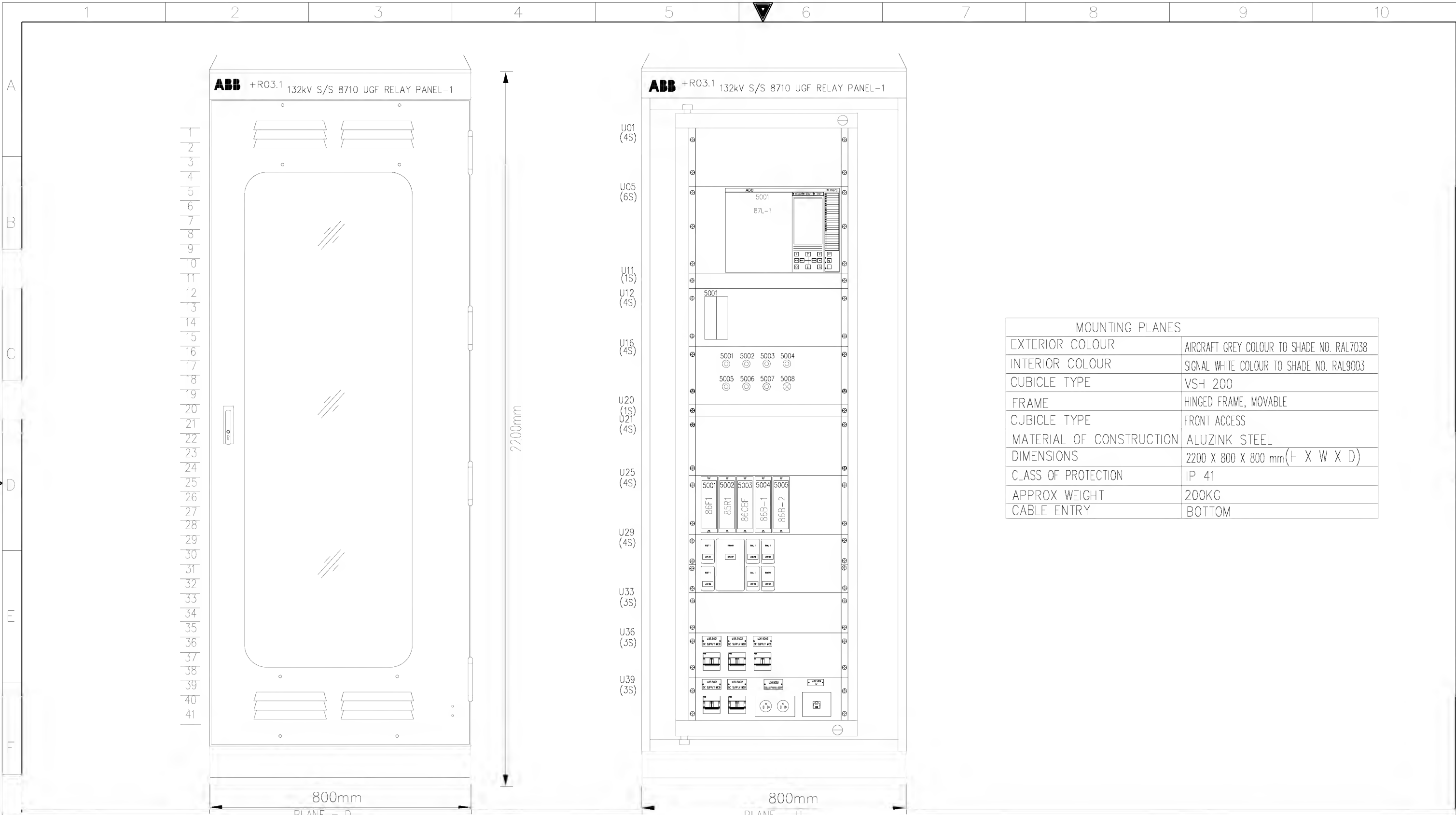


	1	2	3	4	5	6	7	8	9	10
A	<div>ABB</div> <div>POWER SYSTEMS NETWORK MANAGEMENT</div> <div>PROTECTION AND SUBSTATION AUTOMATION SYSTEMS</div> <div>WBS NO: S-13656</div>					<div>ABB AUTOMATION COMPANY LTD.,</div> <div>414, AL-KHARJ ROAD</div> <div>SECOND INDUSTRIAL CITY</div> <div>RIYADH-11383 K.S.A</div>				
B										
C	<div>CONTRACTOR : ABB Contracting Company</div> <div>CLIENT : National Gridsa</div> <div>PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY</div> <div>SUBSTATION : S/S 8709</div> <div>CONTRACT NO. : 11131113/00</div> <div>TITLE : Assembly Drawing – +R03.1 [Under Ground Feeder]</div>									
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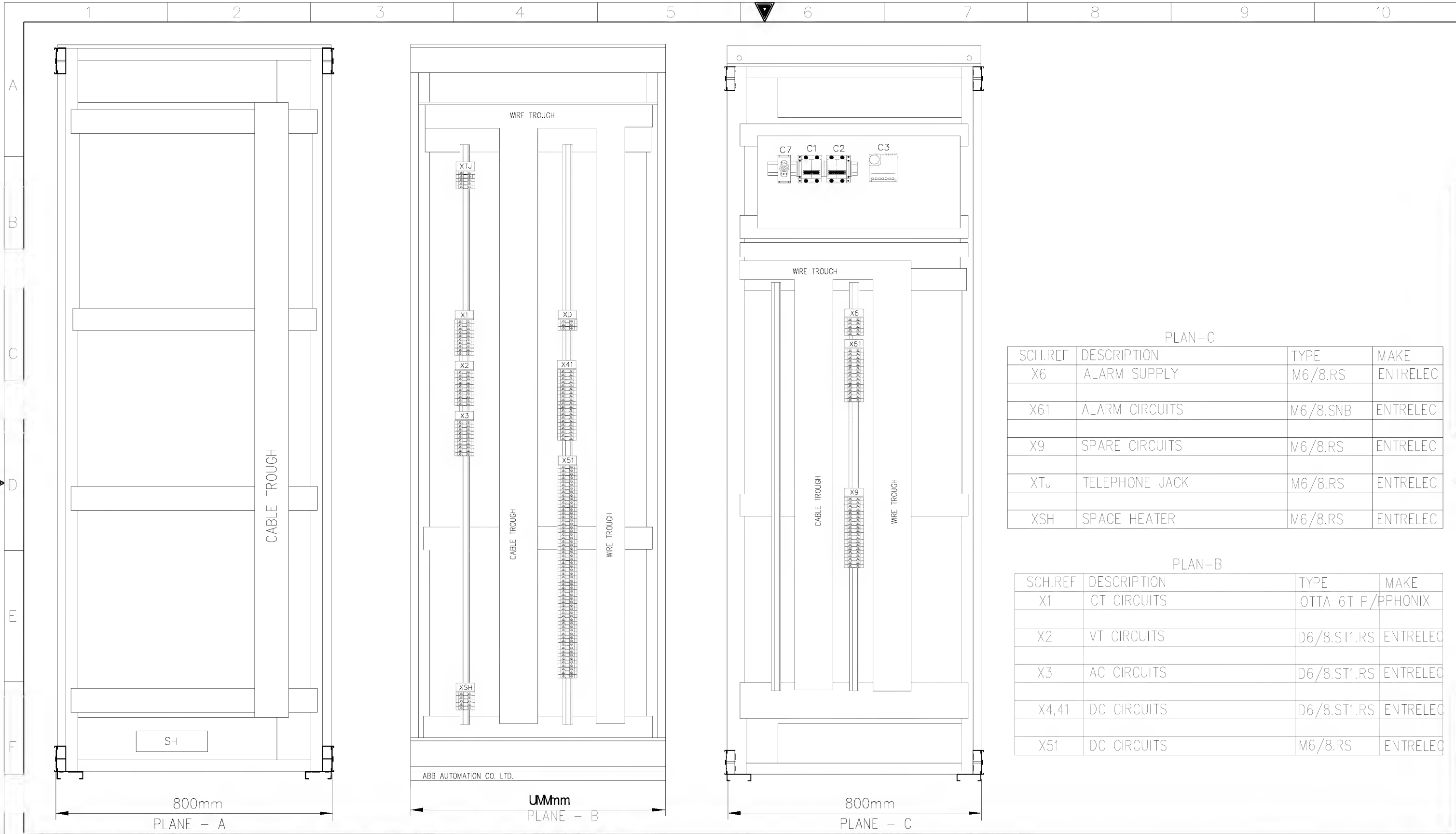
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>				
	01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1 +R03.1	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY	-	C421	CD-322917	SHT G00	CONT. G01
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA					01

NG/D2-D (2012/01)

DMS VECTOR NGD200



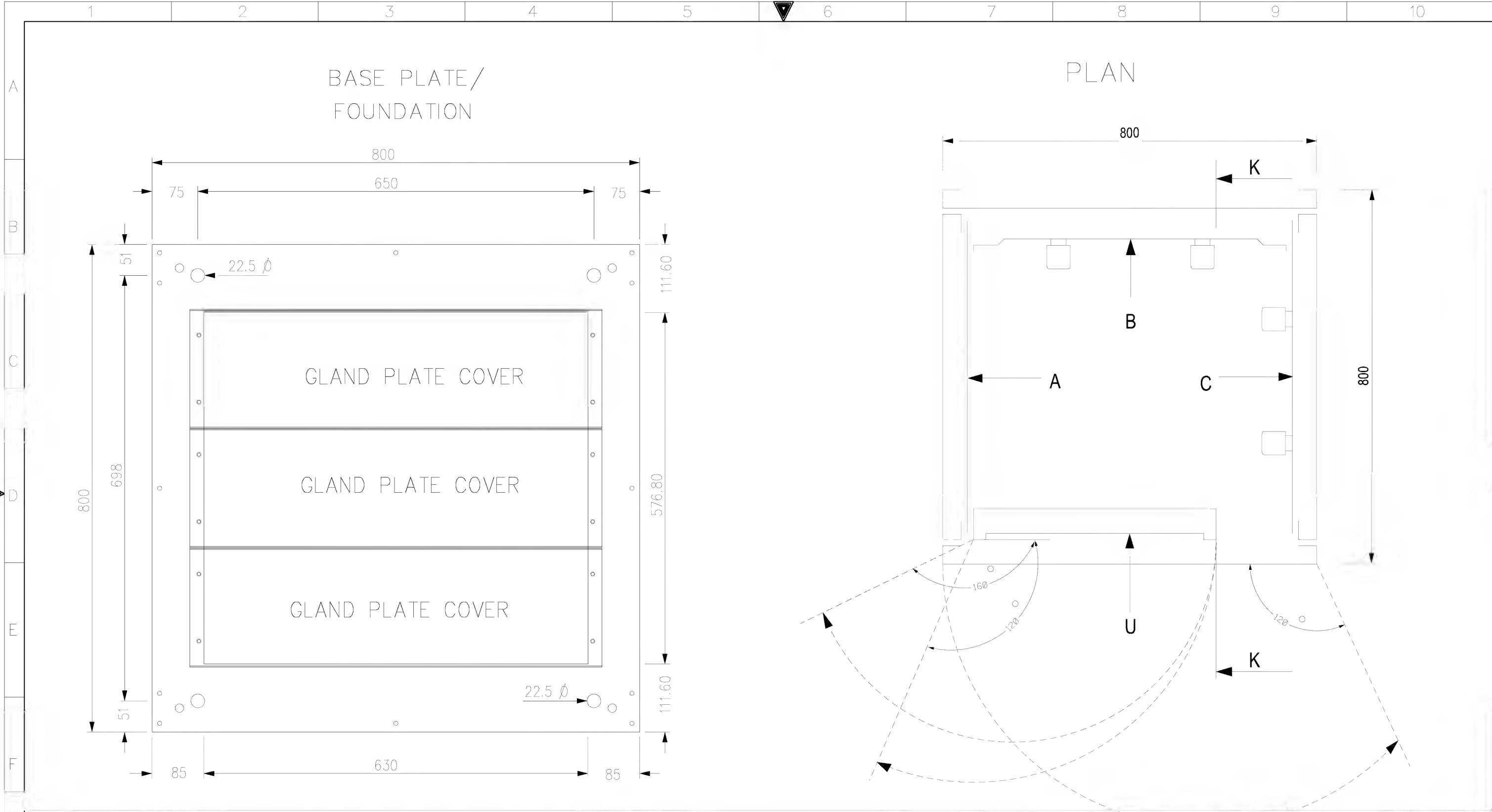
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>							
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1									
01 13 49			FACTORY ASBUILT		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY							
00 13 04			FOR APPROVAL		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA							
REV. NO.			DATE		DESCRIPTION		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
									- C421		CD-322917		SHT G01		CONT. G02	
															01	



PLAN-C			
SCH.REF	DESCRIPTION	TYPE	MAKE
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
X9	SPARE CIRCUITS	M6/8.RS	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

PLAN-B			
SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/	PPHONIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X4,41	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X51	DC CIRCUITS	M6/8.RS	ENTRELEC

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		<div>نقل الكهرباء National Grid sa</div> <div>الشركة الوطنية لنقل الكهرباء</div>	
			DRAWN BY _____ RIZ _____ CHECKED BY _____ KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1					
01 13 49			FACTORY ASBUILT		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.	
00 13 04			FOR APPROVAL		OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC		RIYADH SAUDI ARABIA		- C421 CD-322917	
REV. NO.			DATE		DESCRIPTION				SHT CONT. 01	
									G02 G03	



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY	RIZ	CHECKED BY	KVR
DATE STARTED	24.01.2013	DATE COMPLETED	
OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC

ASSEMBLY DRAWING
132kV UGF-8710 RELAY PANEL-1 +R03.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
National Grid sa		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
-	C421	CD-322917	G03G04
		REV. NO.	
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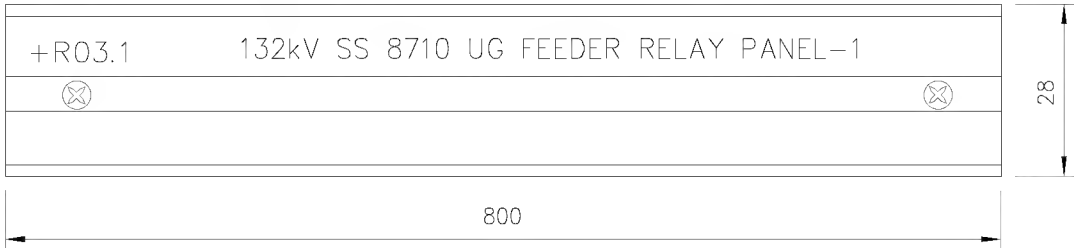
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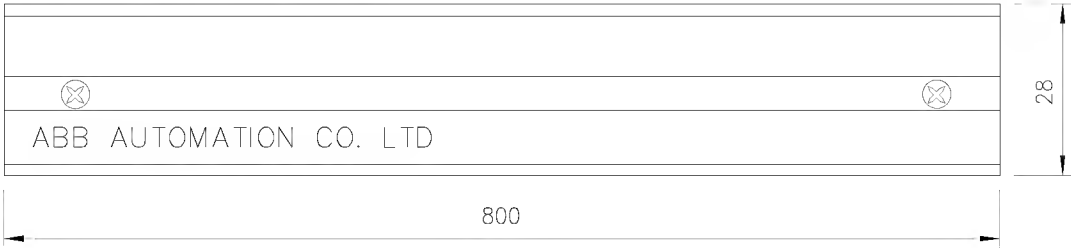


TOP VIEW FOR EARTHING BAR

U PLANE TOP LABEL



U PLANE BOTTOM LABEL



MANUFACTURING LABEL

ABB

ABB Automation Co.Ltd.

PROJECT :

National Grid SA
S/S 8709

ORDER REFERENCE :

2875 RF S13656

YEAR OF MANUFACTURE:

2013

PANEL NO. :

+R03.1

DRAWING NO. :





S13656-CD-323919

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

ASSEMBLY DRAWING	
132kV UGF-8710 RELAY PANEL-1 +R03.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
-	C421	CD-322917		SHT	CONT.
				G04	L00
				REV. NO. 01	

	1	2	3	4	5	6	7	8	9	10																																																									
A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																											
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G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="3">COVER SHEET</td><td colspan="2"> نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa</td></tr><tr><td>01</td><td>13 49</td><td>FACTORY ASBUILT</td><td colspan="2">DRAWN BY RIZ</td><td colspan="2">CHECKED BY KVR</td><td colspan="3">132kV UGF-8710 RELAY PANEL-1 +R03.1</td><td>INDEX</td><td>PLANT NO.</td><td>DRAWING NUMBER</td><td>SHEET NO.</td><td>REV. NO.</td></tr><tr><td>00</td><td>13 04</td><td>FOR APPROVAL</td><td colspan="2">DATE STARTED 24.01.2013</td><td colspan="2">DATE COMPLETED</td><td colspan="3">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td><td>-</td><td>C421</td><td>CD-322917</td><td>SHT L00</td><td>CONT. L01</td></tr><tr><td>REV. NO.</td><td>DATE</td><td>DESCRIPTION</td><td colspan="2">OPRG. DEPT. CTPD</td><td colspan="2">ENG. DEPT. AUT-PSAC</td><td colspan="3">RIYADH SAUDI ARABIA</td><td></td><td></td><td></td><td></td><td>01</td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET			 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa		01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1			INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY			-	C421	CD-322917	SHT L00	CONT. L01	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA							01
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET			 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa																																																									
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NG/D2-D (2012/01)

DMS VECTOR NGD200

	1	2	3	4	5	6	7	8	9	10	
A	SR. NO.	GA. REF.	SCH. REF.	DESCRIPTION		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
				RELAY CUBICLE- +R03.1 ACCOMODATING THE FOLLOWING			1	VSH 200	ABB		
	1	U05.5001	87L-1	NUMERICAL DIFF PROTECTION TERMINAL WITH THE FOLLOWING		298	1	RED 670	ABB	1MRK 004 810-DC	SWEDEN
				FEATURES :		298A					
B				ANALOG MODULE(6I+6U)		299					
				RATED POWER SUPPLY MODULE : (90-250V)DC							
				BINARY I/P MODULE -1NO							
				BINARY O/P MODULE-1NO							
C				OPTICAL ETHERNET MODULE IEC 61850-8-1/100 BASE FX CHANNEL GLASS							
				MEDIUM GRAPHIC HMI,15 CONTROLLABLE OBJECTS,1X 19"							
	2	U12.5001	TS-1	TEST SWITCH FOR RED 670 RELAY		224	1	RTXP24	ABB	RK 926 315-AC	
D	3	U16.5001	S86F1	PUSH BUTTON FOR 86CBF & 86F1 TRIP RELAY RESET PB		232	2	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
		U16.5002	S86CBF	BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO+1NC							
E	4	U16.5003	S86B-1	PUSH BUTTON FOR 86B & LT TRIP RELAY RESET PB		232	3	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
		U16.5004	S86B-2	BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102	
		U16.5005	LT	CONTACT DATA : 1NO+1NC							
F	5	U16.5006	S01	PUSH BUTTON FOR PROTECTION IN		232	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
				BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO+1NC							
G	6	U16.5007	S02	PUSH BUTTON FOR PROTECTION OUT		232	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
				BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO+1NC							
H	7	U16.5008	L01	INDICATION LAMP FOR FPFM OUT		277	1	MC1-10010	ABB	1SFA 611 400 R1003	
				LENS : WHITE				MCBH-003		1SFA 611 605 R1400	SWEDEN
				LED RATING : 110-130V,4-6MA				KA2-2145		1SFA 616 921 R2145	
				HOLDER RATING : 130V WITH RESISTORS DIODEBLOCK							
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A	SR. NO.	GA. REF.	SCH. REF.	D E S C R I P T I O N		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
	8	U25.5001	86F1	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		232	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
B				OPERATION INDICATOR : HAND RESET FLAG							
	9	U25.5002	85R1	HIGH BURDEN TYPE SELF RESET TRIP RELAY		233	1	MVAJ101	ALSTOM	MVAJ101RA0800A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 10 NO							
C				OPERATION INDICATOR : SELF RESET FLAG							
	10	U25.5003	86CBF	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		276	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
D				OPERATION INDICATOR : HAND RESET FLAG							
	11	U25.5004	86B-1	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		276	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
E				OPERATION INDICATOR : HAND RESET FLAG							
	12	U25.5005	86B-2	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		277	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
F				OPERATION INDICATOR : HAND RESET FLAG							
G											
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa			
13 49		DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____		132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.			
00 13 04 FOR APPROVAL		OPRG. DEPT. CTPC ENG. DEPT. AUT-PSAC				S/S 8709-132/13.8KV IN AL-KHARJ CITY		- C421 CD-322917 L02 L03 01			
REV. NO. DATE DESCRIPTION						RIYADH SAUDI ARABIA		NG/D2-D (2012/01) DMS VECTOR NGD200			

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SR. NO.	GA. REF.	SCH. REF.	D E S C R I P T I O N	SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
13	U29.101	74R1/74IT1	DUAL COIL RELAY FOR R1 DC /74IT1 DC	232,233	2	RXSF 1	ABB	RK 271 019-AN	SWEDEN
	U29.301	74RS/74IS	AUXILIARY VOLTAGE : 110-125VDC	277					
			CONTACT DATA : 1NO + 2NC PER COIL						
14	U29.107	K01M	BISTABLE RELAY	232	1	RXMBV 4	ABB	RK 251 401-AP	SWEDEN
			AUXILIARY VOLTAGE : 125V DC						
			CONTACT DATA : 7NC+7NO						
15	U29.119	TMR/86F1	DELAY FOR PICKUP RELAY	232	3	RXKL1	ABB	1MR 000 066-AB	SWEDEN
	U29.319	TMR/86B-1	AUXILIARY VOLTAGE : 24-250V DC	276					
	U29.125	TMR/86B-2	CONTACT DATA : 2C/O	277					
16	U29.325	R1	RESISTOR UNIT FOR TCS	291	1	RXTMA1	ABB	RK 711 008-AF	SWEDEN
			RESISTOR WATT : 6.8 K OHMS						

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LABEL REF.	LABEL ENCRAVING	MATERIALS	ENCRAVING	LABEL SIZE	LETTER SIZE
U05.5001	U05.5001 87L-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U12.5001	U12.5001 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm
U16.5001	U16.5001 S86F1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5002	U16.5002 S86CBF	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5003	U16.5003 S86B-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5004	U16.5004 S86B-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	3mm
U16.5005	U16.5005 LT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U16.5006	U16.5006 S01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5007	U16.5007 S02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U16.5008	U16.5008 L01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5001	U25.5001 86F1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5002	U25.5002 85R1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5003	U25.5003 86CBF	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5004	U25.5004 86B-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5005	U25.5005 86B-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U29.101	U29.101 74R1/74IT1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.301	U29.301 74RS/74IS	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.107	U29.107 K01M	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.119	U29.307 TMR/86BF1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.319	U29.319 TMR/86B-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.125	U29.125 TMR/86B-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.325	U29.325 R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.131	U29.131 R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>									
01 13 49			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
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REV. NO.			DATE		DESCRIPTION		ORI. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH		SAUDI ARABIA		L06		L07	
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NG/D2-D (2012/01)

DMS

VECTOR

NGD200

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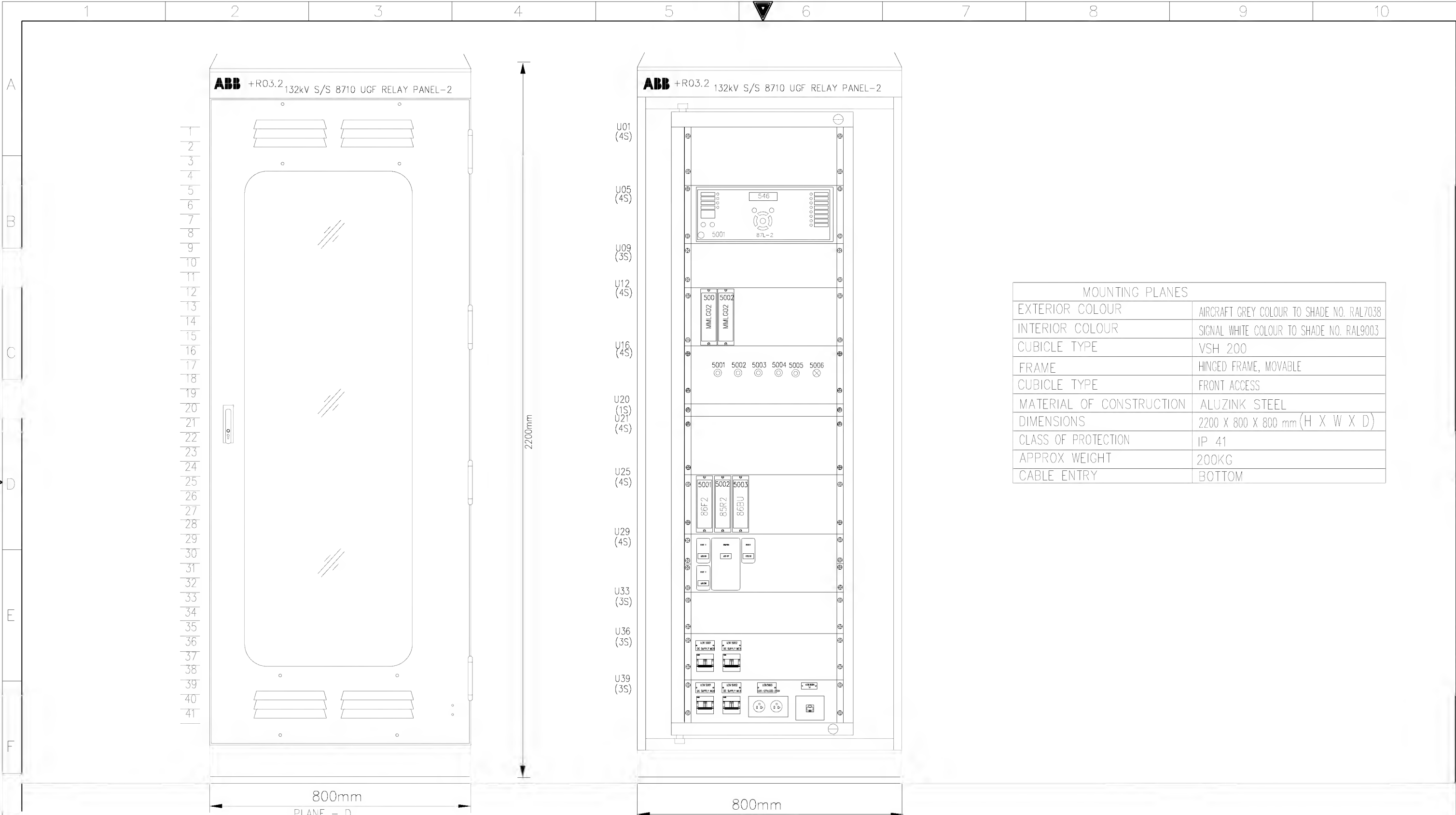
LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
C1	C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C2	C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C3	C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C7	C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
DS	DS DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
IL	IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
SH	SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5001	U39.5001 Q1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5002	U39.5002 Q2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5003	U39.5003 C01/C02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5004	U39.5004 TJ	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5001	U36.5001 Q3	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5002	U39.5002 Q4	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5003	U36.5003 Q5	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm


G

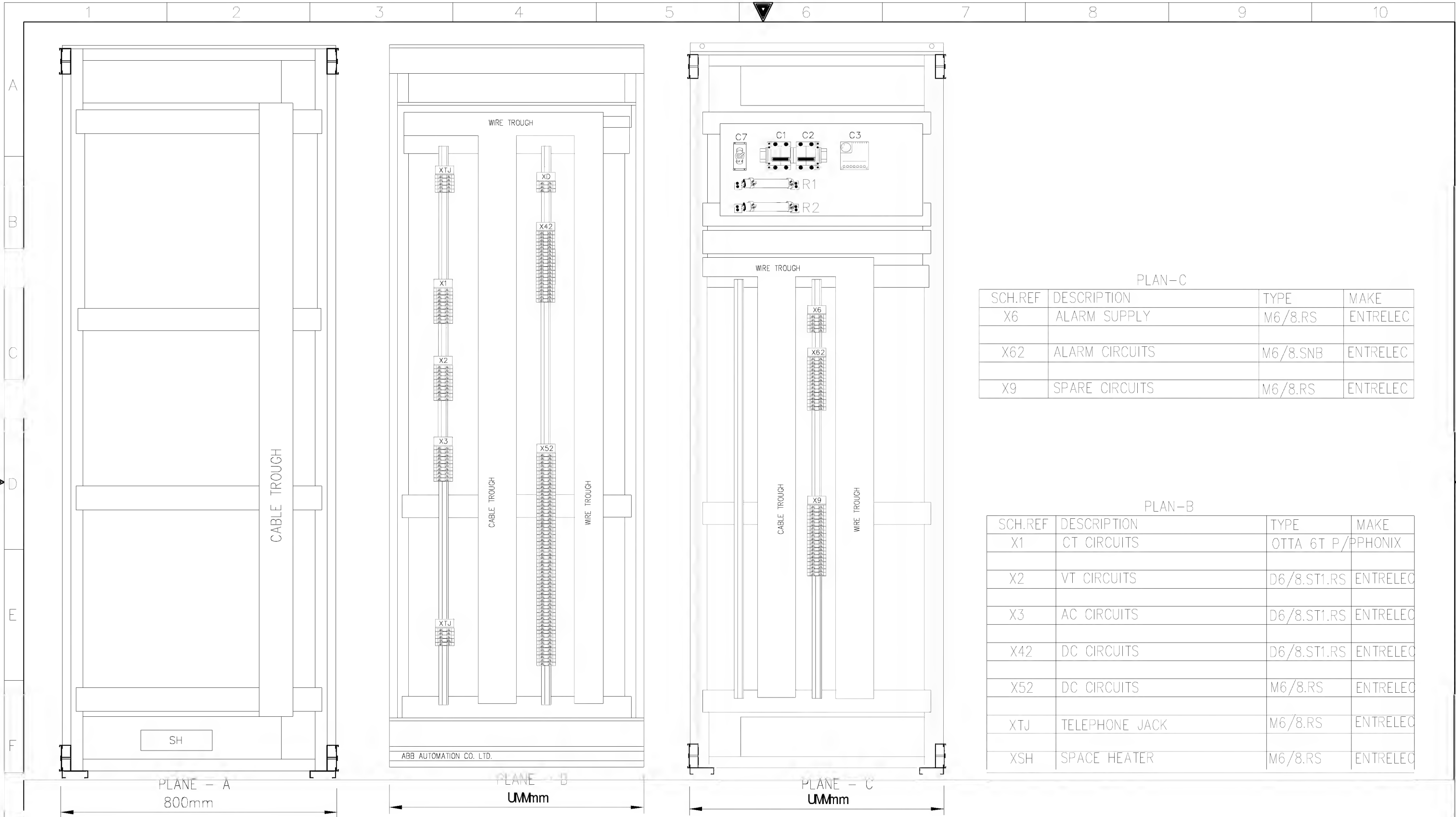
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>					
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ			CHECKED BY KVR			132kV UGF-8710 RELAY PANEL-1 +R03.1					
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013			DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY					
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD			ENG. DEPT. AUT-PSAC			RIYADH		SAUDI ARABIA			
									INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
									-	C421	CD-322917	SHT	CONT.	01
											L07		NIL	

	1	2	3	4	5	6	7	8	9	10
A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A		
B										
C										
D	CONTRACTOR : ABB Contracting Company									
	CLIENT : National Gridsa									
	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY									
	SUBSTATION : S/S 8709									
E	CONTRACT NO. : 11131113/00									
F	TITLE : Assembly Drawing +R03.2 [Under Ground Feeder]									

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET		 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa				
	01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-2 +R03.2	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED	S/S 8709-132/13.8KV IN AL-KHARJ CITY	-	C421	CD-322918	SHT G00	CONT. G01
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA					01




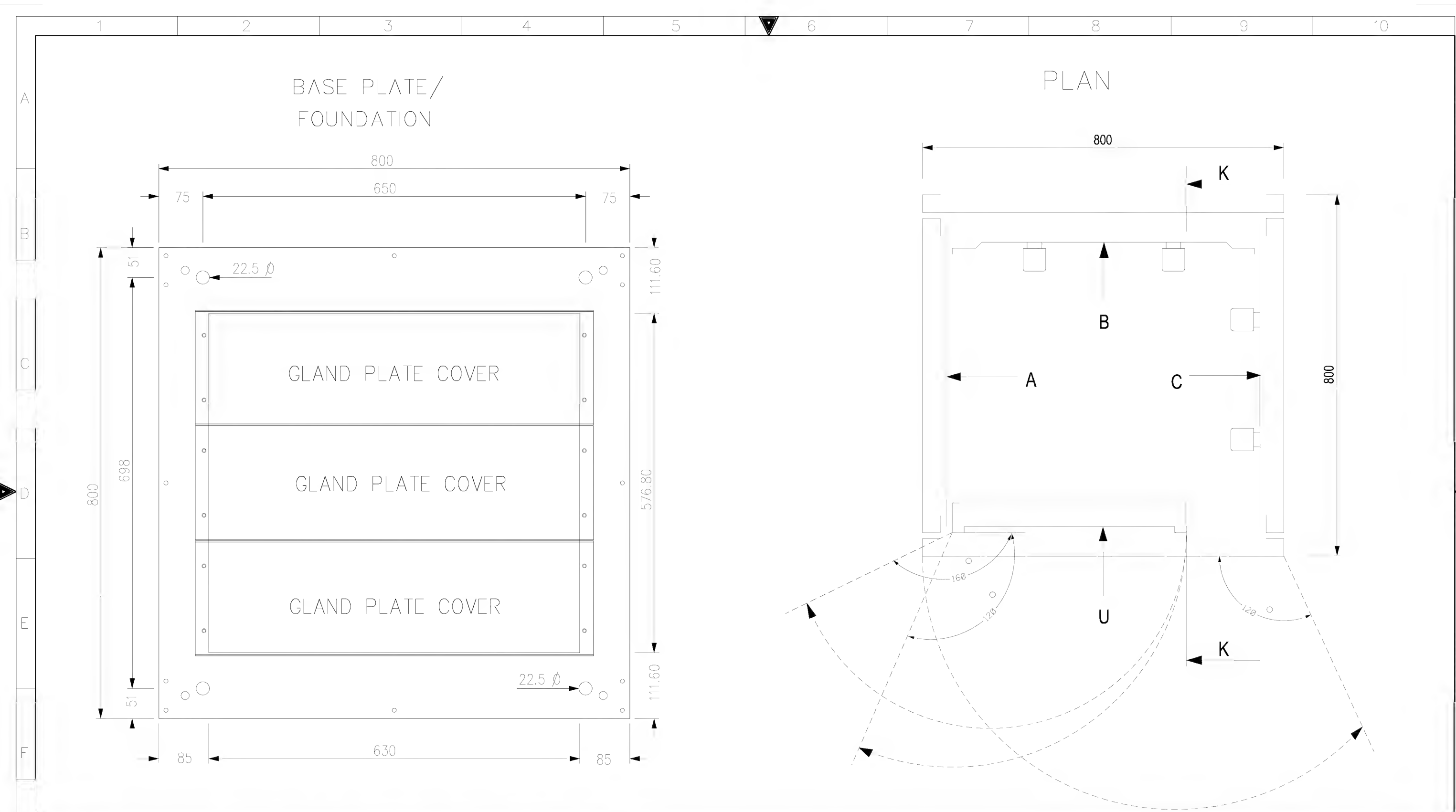
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء</div> <div>National Grid sa</div>	
			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>				132kV UGF-8710 RELAY PANEL-2 +R03.2			
01 13 49			FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.	
00 13 04			FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		- C421 CD-322918	
REV. NO. DATE DESCRIPTION									SHT CONT. 01	
									G01 G02	



PLAN-C			
SCH.REF	DESCRIPTION	TYPE	MAKE
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X62	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
X9	SPARE CIRCUITS	M6/8.RS	ENTRELEC

PLAN-B			
SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/PPHONIX	
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X42	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X52	DC CIRCUITS	M6/8.RS	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		 نقل الكهرباء National Grid SA				
	01	13 49	FACTORY ASBUILT FOR APPROVAL		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04			DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322918		SHT CONT.		01
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA								



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR
DATE STARTED 24.01.2013 DATE COMPLETED _____
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING
132kV UGF-8710 RELAY PANEL-2 +R03.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	
-	C421	CD-322918	SHT	CONT.
			G03	G04
			REV. NO.	
			01	

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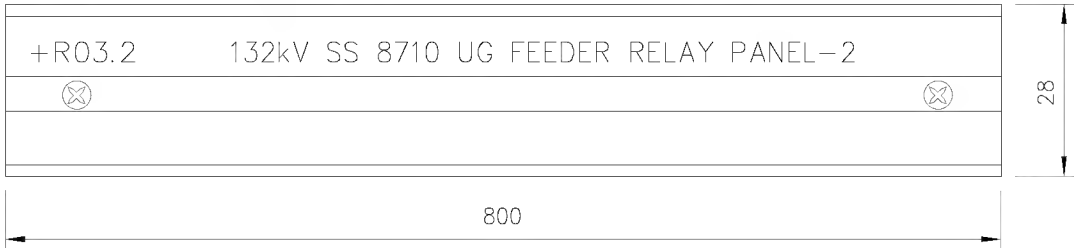
F

G



TOP VIEW FOR EARTHING BAR

U PLANE TOP LABEL



U PLANE BOTTOM LABEL



MANUFACTURING LABEL

ABB

ABB Automation Co.Ltd.

PROJECT :

National Grid SA
S/S 8709

ORDER REFERENCE :

2875 RF S13656

YEAR OF MANUFACTURE:

2013

PANEL NO. :

+R03.2

DRAWING NO. :





S13656-CD-323919

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

ASSEMBLY DRAWING	
132kV UGF-8710 RELAY PANEL-2 +R03.2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	


الشركة الوطنية لنقل الكهرباء					نقل الكهرباء	
					National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
-	C421	CD-322918		SHT	CONT.	01
				G04	L00	

	1	2	3	4	5	6	7	8	9	10																																																									
A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																											
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	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY																																																																		
	SUBSTATION : S/S 8709																																																																		
E	CONTRACT NO. : 11131113/00																																																																		
F	TITLE : LIST OF APPARATUS +R03.2 [Under Ground Feeder]																																																																		
G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="3">COVER SHEET</td><td colspan="2"> نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa</td></tr><tr><td>01</td><td>13 49</td><td>FACTORY ASBUILT</td><td colspan="2">DRAWN BY RIZ</td><td colspan="2">CHECKED BY KVR</td><td colspan="3">132kV UGF-8710 RELAY PANEL-2 +R03.2</td><td>INDEX</td><td>PLANT NO.</td><td>DRAWING NUMBER</td><td>SHEET NO.</td><td>REV. NO.</td></tr><tr><td>00</td><td>13 04</td><td>FOR APPROVAL</td><td colspan="2">DATE STARTED 24.01.2013</td><td colspan="2">DATE COMPLETED</td><td colspan="3">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td><td>-</td><td>C421</td><td>CD-322918</td><td>SHT L00</td><td>CONT. L01</td></tr><tr><td>REV. NO.</td><td>DATE</td><td>DESCRIPTION</td><td colspan="2">OPRG. DEPT. CTPD</td><td colspan="2">ENG. DEPT. AUT-PSAC</td><td colspan="3">RIYADH SAUDI ARABIA</td><td colspan="5"></td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET			 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa		01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2			INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY			-	C421	CD-322918	SHT L00	CONT. L01	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA							
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET			 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa																																																									
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2			INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.																																																					
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY			-	C421	CD-322918	SHT L00	CONT. L01																																																					
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA																																																												

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NG/D2-D (2012/01)
DMS VECTOR NGD200

1	2	3	4	5	6	7	8	9	10	
SR. NO.	LOC. REF	SCH. REF.	D E S C R I P T I O N		SHT	QTY.	TYPE	MAKE	ORD INFORMATION	COUNRTY OF ORIGIN
			RELAY CUBICLE- +R03.2 ACCOMODATING THE FOLLOWING			1				
A	1	U05.5001	87L-2	NUMERICAL HIGH SPEED CURRENT DISTANCE PROTECTION	498	1	P546	ALSTOM	P54631NK6M0710M	UK
				VERSION : 1 & 3 POLE TRIPPING/RECLOSING MHO/QUAD CHAR						
				AUX : 110V-250V DC : 100-120V						
				In/Vn : DUAL RATED CT (1/5A)						
				HARDWARE : EHTHER NET (100mbits) PLUS irig-b modulated						
				PRODUCT OPTION : CH1-1300nm SINGLE MODE						
B				CH2-1300nm SINGLE MODE						
				PROTOCOL OPTION : IEC61850+COURIER VIA REAR RS485 PORT						
				MOUNTING : 19" RACK,2A LOGICAL INPUTS,32 RELAY OUT PUTS						
				LANGUAGE : ENGLISH						
C				SOFTWARE : 71						
	2	U12.5001	TS-1	TEST SWITCH FOR P546 RELAY	422	2	MMLG02	ALSTOM	MMLG02 R1AA 0001E	UK
		U12.5002	TS-2							
	3	U16.5001	S03	PUSH BUTTON FOR FPSM IN SELECTION	432	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
D				BUTTON COLOUR : BLACK			MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO + 1NC						
	4	U16.5002	S04	PUSH BUTTON FOR FPSM OUT SELECTION	432	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
				BUTTON COLOUR : BLACK			MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO + 1NC						
	5	U16.5003	S86BU	PUSH BUTTON FOR 86BU RESET	443	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
E				BUTTON COLOUR : BLACK			MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO + 1NC						
	6	U16.5004	S86F2	PUSH BUTTON FOR 86F2 RESET	432	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
				BUTTON COLOUR : BLACK			MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO + 1NC						
	7	U16.5005	LT	PUSH BUTTON FOR 86F2 RESET	431	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
F				BUTTON COLOUR : BLACK			MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO + 1NC						
	8	U16.5006	L01	INDICATION LAMP OUT	431	1	MC1-100W	ABB	1SFA 611 400 R1003	SWEDEN
				LENS : WHITE			MCBH-003		1SFA 611 605 R1400	
				LENS RATING 110-130V,4-6MA			KA2-2145		1SFA 616 921 R2145	
				HOLDER RATING :130V WITH RESISTORS DIODE BLOCK						

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET		الشركة الوطنية لنقل الكهرباء				National Grid sa					
01 13 49			FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
00 13 04			FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-		C421		CD-322918		SHT		CONT.	
REV. NO.			DATE		DESCRIPTION		ORPG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH		SAUDI ARABIA		L01		L02		01	

12345678910												
A	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN		
	15			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT	416	4	S 282 UC-K6 S2-H02	ABB	GH S282 0164 R0377 GH S270 1916 R0003	GERMANY		
		U39.5001	Q1	Q1 R2+ SUPPLY								
		U39.5002	Q2	Q2 R3 ± SUPPLY								
		U36.5001	Q3	Q3 IT2+ SUPPLY								
B		U36.5002	Q4	Q4 TC2 + SUPPLY								
	16	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC	411	1	USM45 &	LEGRAND	74140 & 74180	FRANCE		
			C02	CONVENIENCE OUTLET 10A, 220V AC			USMS45					
			C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS	411	2	S202-K10 S2C-H11L	ABB	2CDS 253 001 R0104 2CDS 200 936 R0001	GERMANY		
	17		C3	THERMOSTAT FOR SPACE HEATER, 5-60° C	411	1	SK 3110	RITTAL	SK 3110	THIWAN		
C	18	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE	411	1	EDF410	EDISON	EDF410	SWEDEN		
	19		C7	ON/OFF SWITCH FOR SPACE HEATER	411	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101			
	20		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP	411	1	LS30PKB1302	ABB	1SBV 010213 R1202	SWEDEN		
	21		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W	411	1	T-4	SUNON	SP-20W			
	22		SH	SPACE HEATER, 150W, 120V, 60Hz	411	1	RICA	GRUPPO	1FZEK 006 C001	ITALY		
D	23		R1	FIXED RESISTOR FOR TRIP CIRCUIT SUPERVISION CKT.	491	2	GRF 30/200	DANOTHERM	GRF 30/200	GERMANY		
			R2	2.5Kohm,15W								
E												
F												
G	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa			
	01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322918	SHT L04 CONT. L05	01
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA						
NG/D2-D (2012/01) DMS VECTOR NGD200												

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SR. NO.	ITEM DESIGNATION	D E S C R I P T I O N	SHEET.NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
24	X1	BOLT CONNECTING TERMINAL BLOCKS FOR DISCONNECTABLE CT CIRCUITS	501	10	OTTA 6T P/P	PHOENIX	0790462	GERMANY
	X2	SPRING LOADED TERMINAL BLOCKS FOR DISCONNECTABLE VT CIRCUITS	501	5	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X3	SPRING LOADED TERMINAL BLOCKS FOR DISCONNECTABLE AC CIRCUITS	501	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X42	SPRING LOADED TERMINAL BLOCK FOR DISCONNECTABLE DC CIRCUITS	501	50	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X52	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS	501	50	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	X62,X6	KNIFE TYPE TERMINAL BLOCKS FOR COMMON ALARM CIRCUITS	501	15,5	M6/8.SNB	ENTRELEC	1SNA 115 685 R1200	FRANCE
	X9	SPRING LOADED TERMINAL BLOCKS FOR SPARE CIRCITS	501	15	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XTJ	SPRING LOADED TERMINAL BLOCKS FOR TELEPHONE JACK	501	5	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XSH	SPRING LOADED TERMINAL BLOCKS FOR SPACE HEATER	501	3	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XD	TERMINAL BLOCKS WITH BLOCKING DIODE	501	3	M4/6.S IN5408 V150ZA1	ENTRELEC MEJDAF RS	11521310 02-049 239-270	FRANCE
	X6	SPRING LOADED TERMINAL BLOCKS FOR ALARM CIRCITS	501	5	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

LIST OF APPARATUS	
132kV UGF-8710 RELAY PANEL-2 +R03.2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	
-	C421	CD-322918	SHT	CONT.
			L05	L06
				01

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										

LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
U05.5001	U05.5001 87L-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U12.5001	U12.5001 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm
U12.5002	U12.5002 TS-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm
U16.5001	U16.5001 S03	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5002	U16.5002 S04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5003	U16.5003 S86BU	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5004	U16.5004 S86F2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	3mm
U16.5005	U16.5005 LT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U16.5006	U16.5006 L01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5001	U25.5001 86F2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5002	U25.5002 85R2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5003	U25.5003 86BU	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U29.101	U29.101 74R2/74R3	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.107	U29.107 K01S	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.301	U29.301 TMR/86F2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.125	U29.125 74IT2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.119	U29.119 R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.319	U29.319 R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY	RIZ	CHECKED BY	KVR
DATE STARTED	24.01.2013	DATE COMPLETED	
OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC

LIST OF APPARATUS	
132kV UGF-8710 RELAY PANEL-2 +R03.2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA


الشركة الوطنية لنقل الكهرباء			نقل الكهرباء		
			National Grid sa		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322918	SHT	CONT.	01
			L06	L07	


1	2	3	4	5	6	7	8	9	10
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LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
C1	C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C2	C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C3	C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C7	C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
DS	DS DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
IL	IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
SH	SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5001	U39.5001 Q1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5002	U39.5002 Q2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5003	U39.5003 C01/C02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5004	U39.5004 TJ	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5001	U36.5001 Q3	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5002	U36.5002 Q4	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

LIST OF APPARATUS	
132kV UGF-8710 RELAY PANEL-2 +R03.2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء National Grid sa		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322918	SHT	CONT.	01
			L07	NIL	

	1	2	3	4	5	6	7	8	9	10
A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD. 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A		
B										
C										
D	CONTRACTOR : ABB Contracting Company									
	CLIENT : National Gridsa									
	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY									
	SUBSTATION : S/S 8709									
E	CONTRACT NO. : 11131113/00									
F	TITLE : SCHEMATICS DRAWINGS (Under Ground Feeder)									

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET		 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa				
	01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-8710 RELAY PANEL-1/2	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED	S/S 8709-132/13.8KV IN AL-KHARJ CITY	-	C421	CD-322919	SHT 000	CONT. 001
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA					01

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CONTENTS	ABB SHT.NO.	REV.00	REV.01	REV.02
AC SUPPLY FOR ILLUMINATION & POWER SOCKET	411	X	X	
AC MCB AUX CONTACTS	412	X	X	
AC MCB AUX CONTACTS	416	X	X	
CURRENT TRANSFORMER INPUTS –87L–2	421	X	X	
VOLTAGE TRANSFORMER INPUTS – 87L–2	422	X	X	
COMMUNICATION CIRCUIT – 87L2	423	X	X	
MAIN–2 PROT. 87L–2 RELAY BINARY INPUTS	431	X	X	
MAIN–2 DIFF. PROTECTION TRIP RELAY CKT.	432	X	X	
MAIN–2 INTERTRIP RELAY CKT.	433	X	X	
BACKUP PROTECTION TRIP RELAY CIRCUIT	443	X	X	
OPTICAL / ELECTRICAL INTERFACE	446	X	X	
MAIN–2 INDICATION CKT.	478	X	X	
TRIP COIL–2 SUPERVISION CIRCUIT	491	X	X	
TRIP COIL–1 & CBF INITIATION CONTACTS	492	X	X	
CLOSING CIRCUIT	493	X	X	
COMMON ALARM CIRCUITS	494	X	X	
SPARE CONTACTS	495	X	X	
BLOCK REFERENCE–87L–2	498	X	X	
BLOCK REFERENCE–87L–2	499	X	X	
TERMINAL BLOCKS REFERENCE +R03.2	501	X	X	

G

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CONTENTS SHEET		<div>الشركة الوطنية لنقل الكهرباءNational Grid sa</div>									
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1/2		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
01 13 49			FACTORY ASBUILT		DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-		C421		CD-322919		01	
00 13 04			FOR APPROVAL		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA						002 011			
REV. NO.			DATE			DESCRIPTION												

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E										
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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FRAME CONNECTION		MAIN CONTACT OF A CIRCUIT BREAKER		RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING
	EARTH CONNECTION		PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE		RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS
	RESISTOR		BREAK CONTACT DELAYED WHEN OPERATING		
	VARIABLE RESISTOR		MAKE CONTACT DELAYED WHEN RELEASING		SIGNALLING LAMP
	RESISTOR WITH PRESET ADJUSTMENT		TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION		MECHANICAL INDICATOR WITH AUTOMATIC RESET
	CAPACITOR		JUNCTION OF MECHANICAL LINKS		MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
	SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE		AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET
	OPEN CONTACT, MAKE CONTACT		NON-AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
	CLOSED CONTACT, BREAK CONTACT		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET		RELAY WITH MAKE CONTACT
	CHANGE-OVER CONTACT, BREAK BEFORE MAKE		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET		RELAY WITH CHANGE-OVER CONTACT
	MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING		CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL AUTOMATIC RESET FROM POSITION 1-2 TO THE NEUTRAL POSITION		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING
	BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING
	SWITCHING DEVICE WITH MANUAL CONTROL		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING		RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING
	MAKE CONTACT DELAYED WHEN OPERATING		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING		ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND ONE OPERATED POSITION
	BREAK CONTACT DELAYED WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING		ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND TWO OPERATED POSITIONS
	MAKE CONTACT DELAYED WHEN OPERATING AND RELEASING		BELL, BUZZER		SIREN, HORN
	MAIN CONTACT OF A SWITCH DISCONNECTOR				
	MAIN CONTACT OF A DISCONNECTOR				

AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656	
Ø1	13 49	FACTORY ASBUILT		DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>	
Ø0	13 04	FOR APPROVAL		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>	

GRAPHICAL SYMBOLS FOR DIAGRAMS
132kV UGF-8710 RELAY PANEL-1/2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء National Grid sa		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322919	SHT	CONT.	01
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G

LEGENDS

±R1

±R2

±R3

±IT

FL

BB RS±

BB CBF±/CBF±

DC SUPPLY – MAIN PROTECTION

DC SUPPLY – SECONDARY PROTECTION

DC SUPPLY – BACK UP PROTECTION

DC SUPPLY – INTER TRIP

DC SUPPLY – FLASHING CIRCUIT

DC SUPPLY – BUS BAR – PROTECTION RESET

DC SUPPLY – CBF PROTECTION

R

CR

ECC

LOCAL

REMOTE

RESET BUS – ALARM SYSTEM

CONTROL ROOM

ENERGY CONTROL CENTRE

THE LOCATION OF CONTROLLED DEVICE

ANY OTHER LOCATION NOT LOCAL

ON

OFF

A

T

S

CS

CT

LS

LT

LC

LO

RO

OP

RE

CB NORMALLY OPEN AUXILIARY CONTACT

CB NORMALLY CLOSED AUXILIARY CONTACT

COMMON

TEST POSITION

SERVICE POSITION

CLOSE IN SERVICE POSITION

CLOSE IN TEST POSITION

LOCAL SERVICE

LOCAL TEST

LOCAL CLOSE

LOCAL OPEN

REMOTE OPEN

OPERATE

RESET

NOTES

LABELS

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

WIRING


PVC INSULATED 600V GRADE
2.5 SQ.mm. YELLOW COLOURED FOR CT CIRCUITS
2.5 SQ.mm. RE COLOURED FOR VT CIRCUITS
1.5 SQ.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS
2.5 SQ.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS
2.5 SQ.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS
FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES:
+ SIGN FOR DC + WIRE
– SIGN FOR DC – WIRE

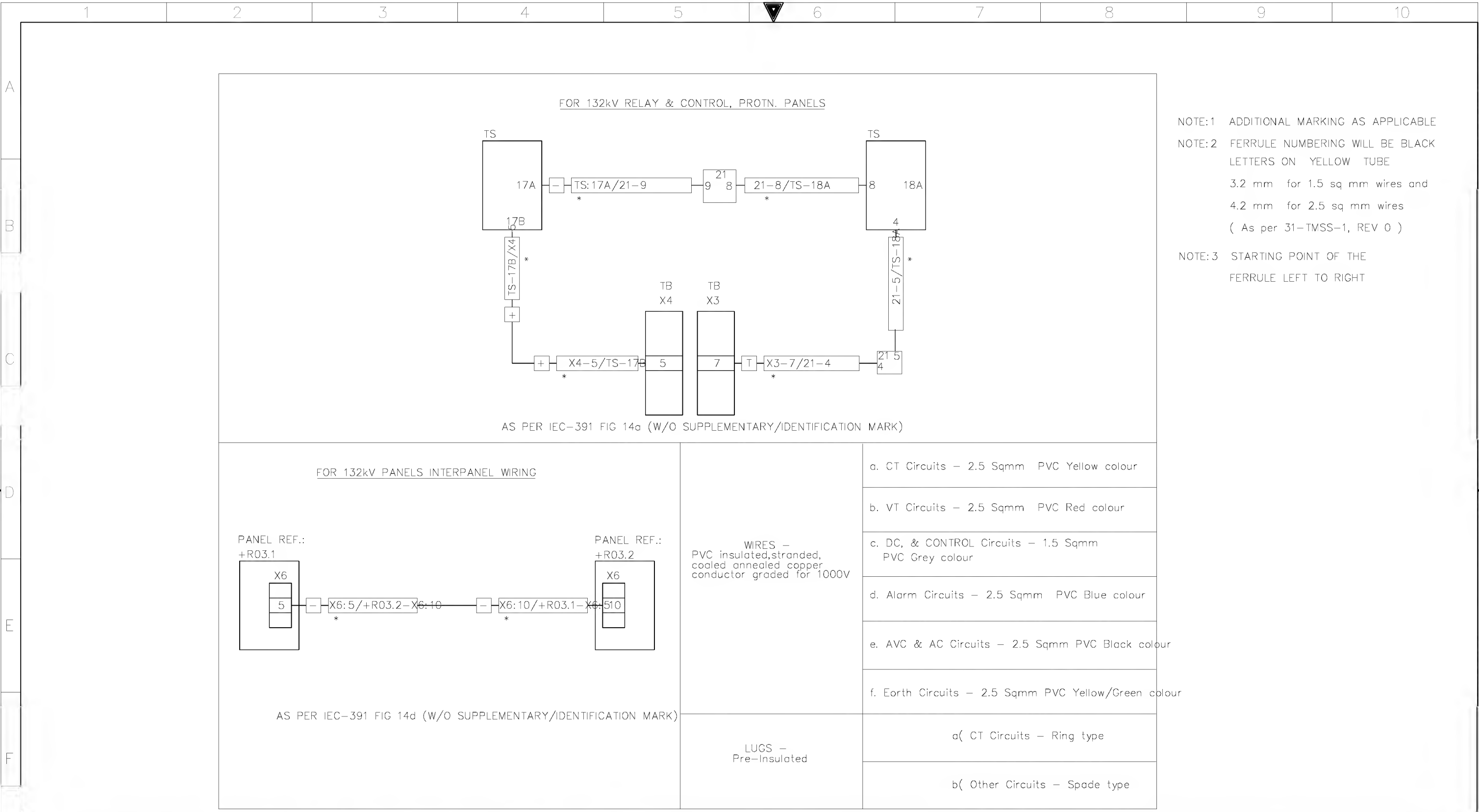
LUGS

A. CT CIRCUITS– RING TYPE
B. OTHER CIRCUITS – SPADE TYPE

FERULLING

YELLO TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES (AS PER 31 – TMSS–1, RE.0)

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMON LEGEND		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء</div> <div>National Grid sa</div>							
01	13 49	FACTORY ASBUILT		DRAWN BY _____ RIZ _____		CHECKED BY _____ KVR _____		132kV UGF-8710 RELAY PANEL-1/2		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322919		SHT	CONT.	01
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. _____ CTPD _____		ENG. DEPT. _____ AUT-PSAC _____		RIYADH SAUDI ARABIA						013	014	



NOTE:1 ADDITIONAL MARKING AS APPLICABLE

NOTE:2 FERRULE NUMBERING WILL BE BLACK LETTERS ON YELLOW TUBE

3.2 mm for 1.5 sq mm wires and

4.2 mm for 2.5 sq mm wires

(As per 31-TMSS-1, REV 0)

NOTE:3 STARTING POINT OF THE FERRULE LEFT TO RIGHT

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

FERRULE AND WIRING DETAILS

132kV UGF-8710 RELAY PANEL-1/2

S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	SHT 014	CONT. 015


NG/D2-D (2012/01)

DMS

VECTOR

NGD200

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MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION C SUBSTATION AUTOMATION		SS 8709 132kV RELAY PANELS	
	CD-322928	132/13.8kV GT-1 RELAY PANEL -1	+R05.1
		132/13.8kV GT-1 RELAY PANEL -2	+R05.2
	CD-322931	132/13.8kV GT-2 RELAY PANEL -1	+R03.1
		132/13.8kV GT-2 RELAY PANEL -2	+R03.2
	CD-322934	132/13.8kV GT-3 RELAY PANEL -1	+R04.1
		132/13.8kV GT-3 RELAY PANEL -2	+R04.2
	CD-322936	132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL	+AVC
	CD-322922	132KV SPARE-1 UGF RELAY PANEL -1	+R07.1
		132KV SPARE-1 UGF RELAY PANEL -2	+R07.2
	CD-322916	132KV 8020 UGF RELAY PANEL -1	+R02.1
		132KV 8020 UGF RELAY PANEL -2	+R02.2
	CD-322919	132KV 8710 UGF RELAY PANEL -1	+R03.1
		132KV 8710 UGF RELAY PANEL -2	+R03.2
	CD-322925	132KV SPARE-2 UGF RELAY PANEL -1	+R06.1
		132KV SPARE-2 UGF RELAY PANEL -2	+R06.2
	CD-323012	132KV FOIP PANEL	+FOIP
	CD-322946	132kV BUS COUPLER-A	+R130
	CD-322948	132kV BUS COUPLER-B	+R230
	CD-322950	132kV BUS SECTION	+R120
	CD-322991	132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL	+BB1-1
	CD-322993	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-2
	CD-322995	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-3
	CD-322997	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-4
	CD-322999	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-5
	CD-323001	132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL	+BB2-1
	CD-323003	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-2
	CD-323005	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-3
	CD-323007	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-4
	CD-323009	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-5

AS-BUILT BY _____ DATE _____

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

01

13 49

FACTORY ASBUILT

00

13 04

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY RIZ

CHECKED BY KVR

DATE STARTED 24.01.2013

DATE COMPLETED

OPRG. DEPT. CTPD

ENG. DEPT. AUT-PSAC


DRAWING REFERENCES

132kV UGF-8710 RELAY PANEL-1/2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

نقل الكهرباء

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ABB
PROTECTION C SUBSTATION
AUTOMATION

MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
		SS 8709 13.8KV RELAY PANELS	
	CD-322952	13.8KV Capacitor Bank-1 Protection Panel	+CBP-1
	CD-322954	13.8KV Capacitor Bank-2 Protection Panel	+CBP-2
	CD-322956	13.8KV Capacitor Bank-2 Protection Panel	+CBP-3
	CD-322958	13.8 KV ACCS PANEL	+ACCS
	CD-322962	13.8KV ACSE PANEL	+ACSE
	CD-322968	13.8KV Under Voltage Load Shedding Panel	+UVLS
	CD-322964	13.8KV Under Frequency Load Shedding Panel-1	+UFLS01
	CD-322966	13.8KV Under Frequency Load Shedding Panel-2	+UFLS02

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

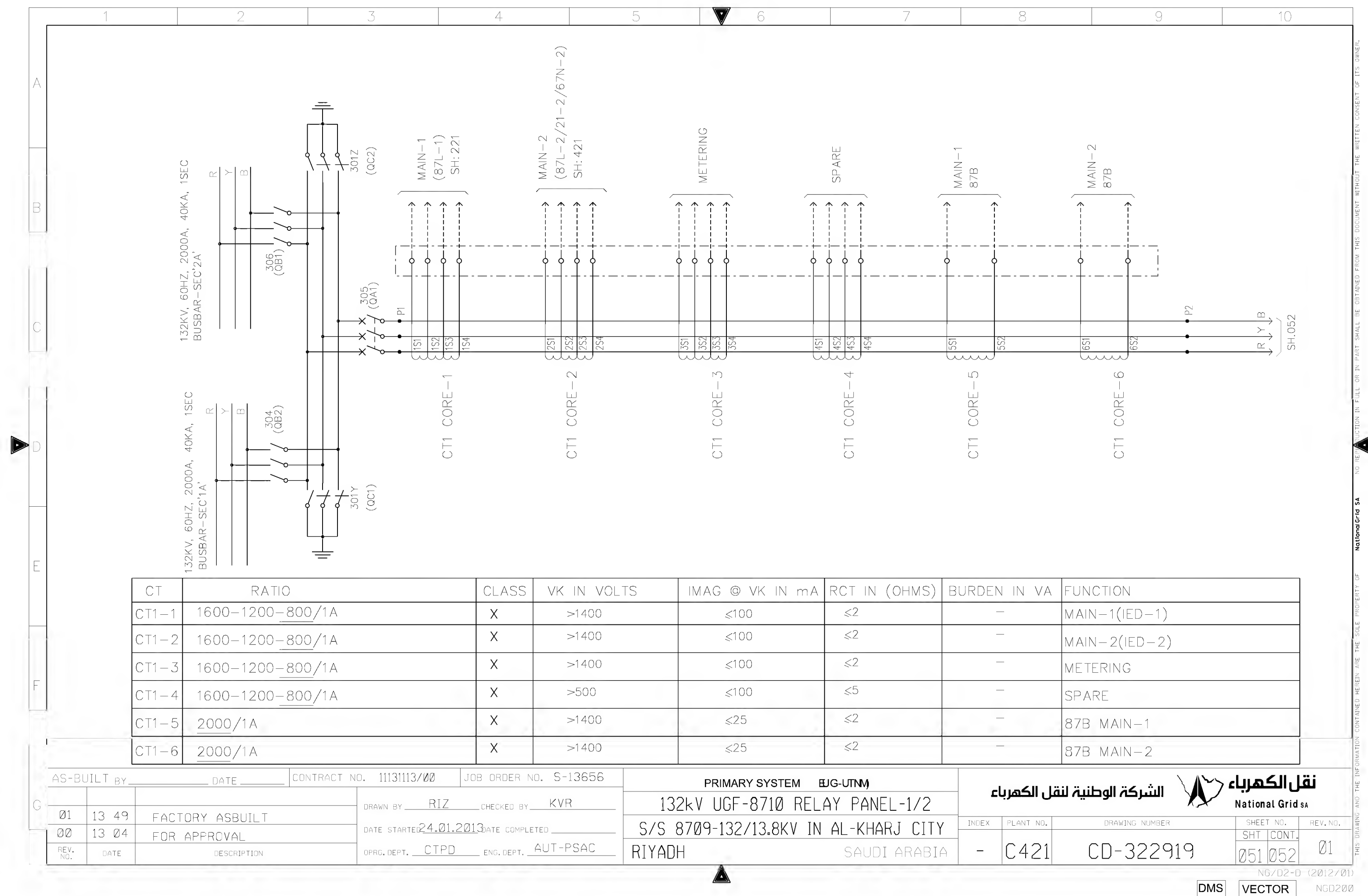
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

DRAWING REFERENCES

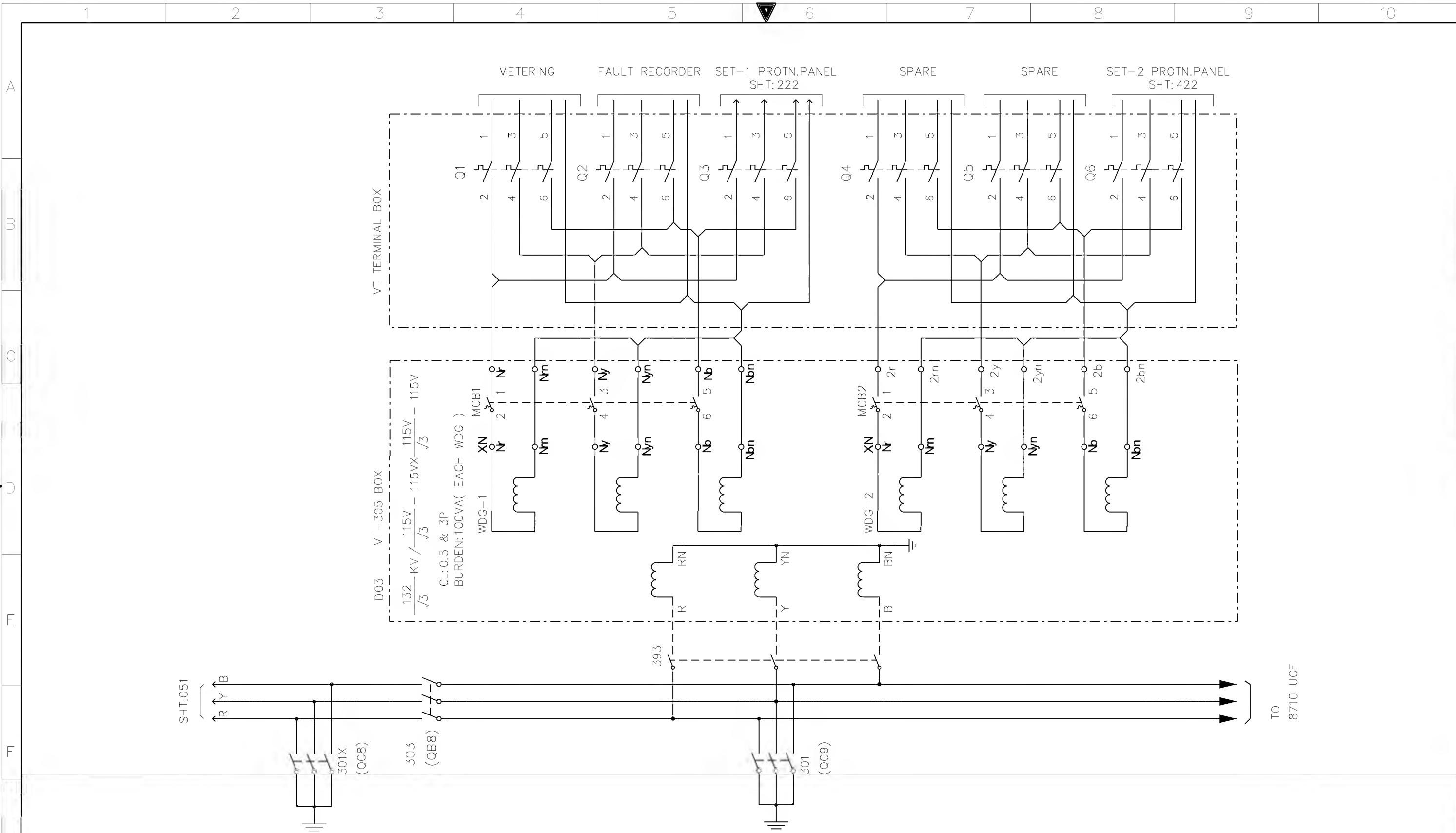
132kV UGF-8710 RELAY PANEL-1/2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
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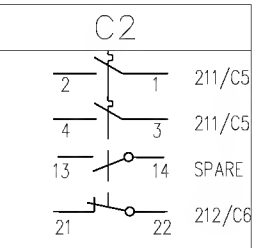
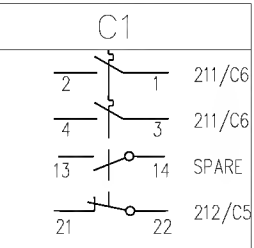
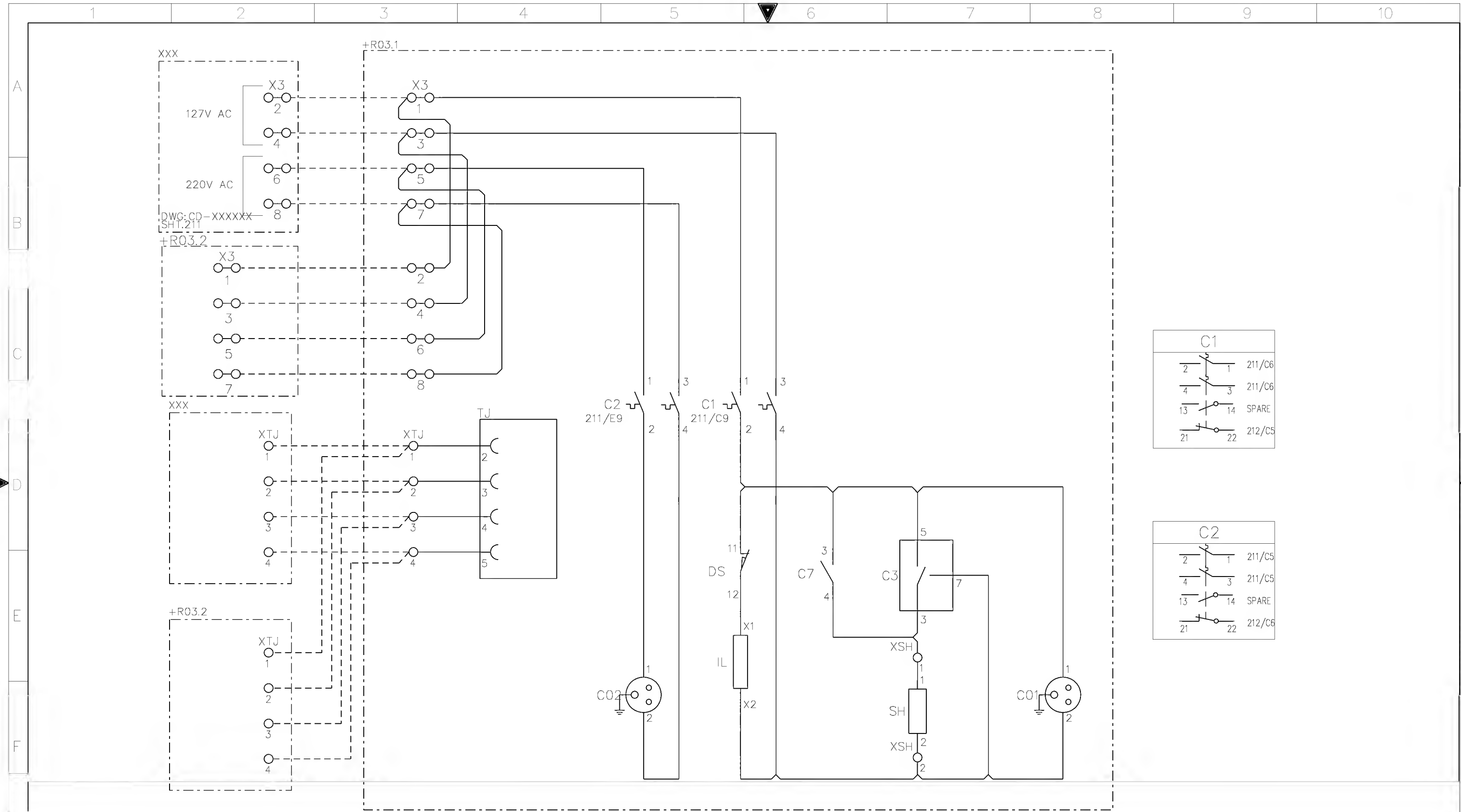
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>			
01	13 49	FACTORY ASBUILT	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____			
00	13 04	FOR APPROVAL				
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>			

PRIMARY SYSTEM (UG-8710)
132kV UGF-8710 RELAY PANEL-1/2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid SA	
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				052	211
				REV. NO. 01	



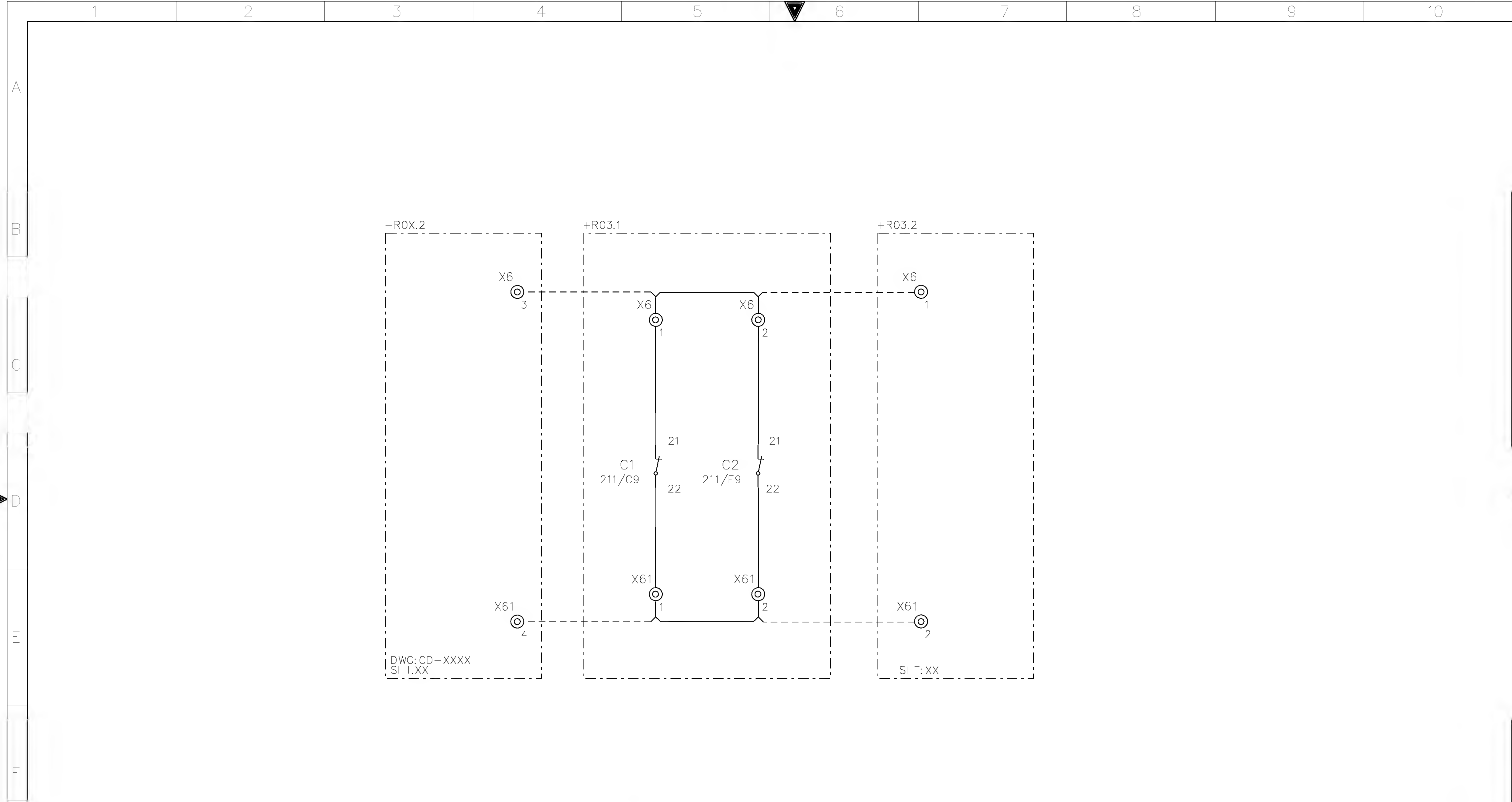
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656


01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

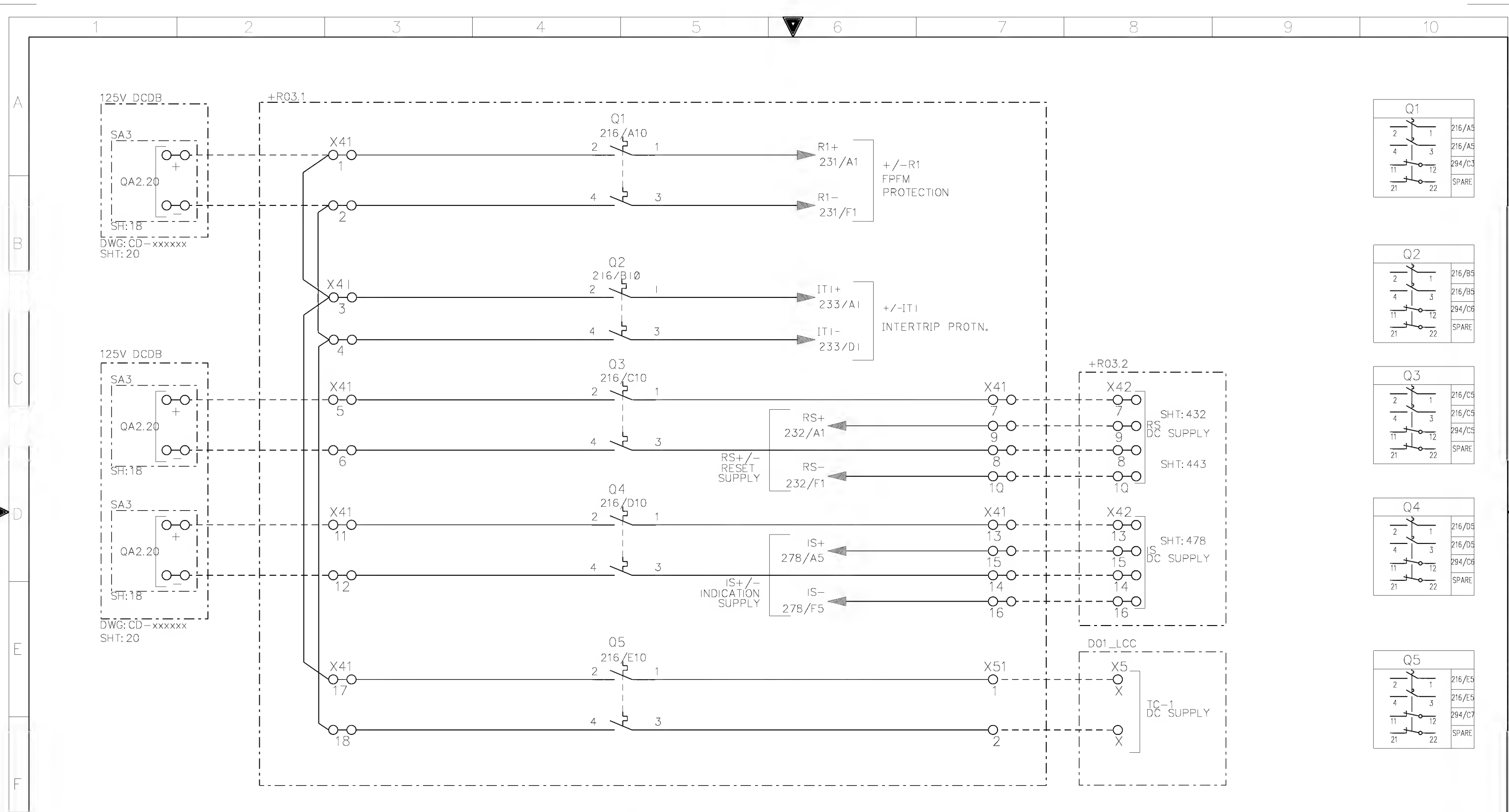
AC SUPPLY FOR ILLUMINATION & POWER SOCKET
132kV UGF-8710 RELAY PANEL-1/2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	SHT 211	CONT. 212
				01



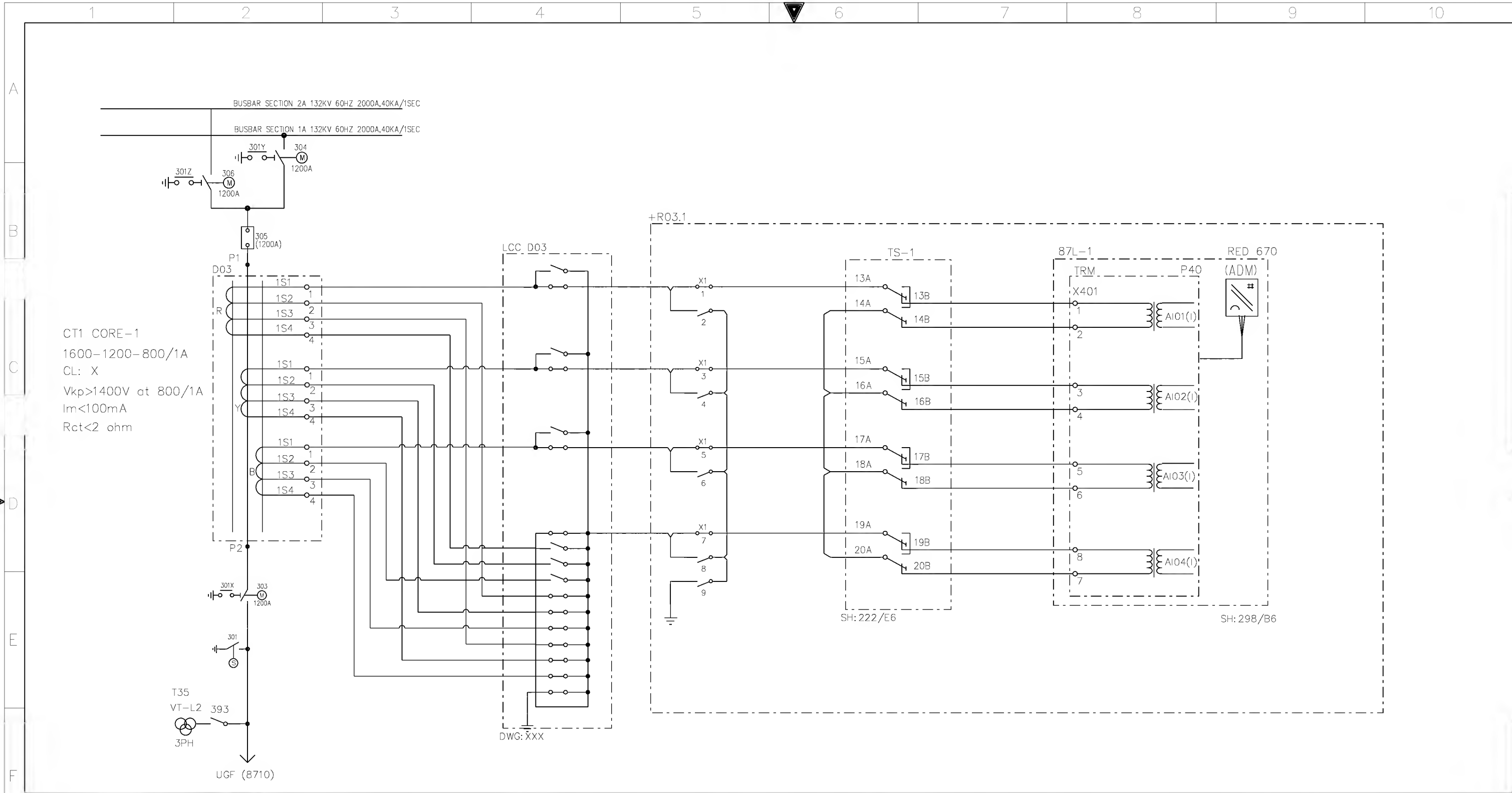
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		AC MCB AUX CONTACTS		الشركة الوطنية لنقل الكهرباء National Grid sa						
							132kV UGF-8710 RELAY PANEL-1/2								
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		RIYADH SAUDI ARABIA		-	C421	CD-322919		SHT	CONT.	01
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC							212	216		



AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

DC SUPPLY DISTRIBUTION	
132kV UGF-8710 RELAY PANEL-1/2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء		
				National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
-	C421	CD-322919		SHT	CONT.	01
				216	221	

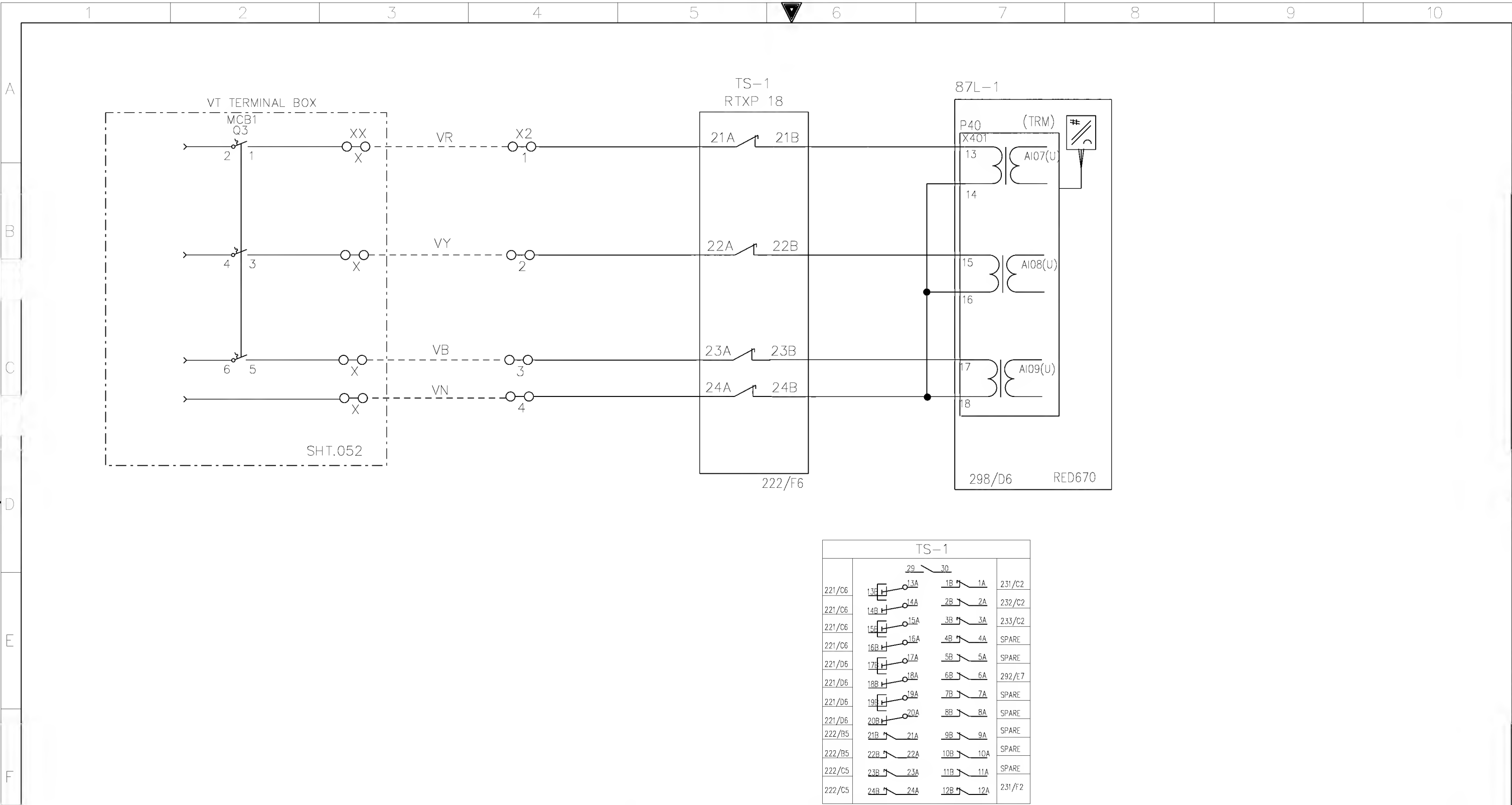


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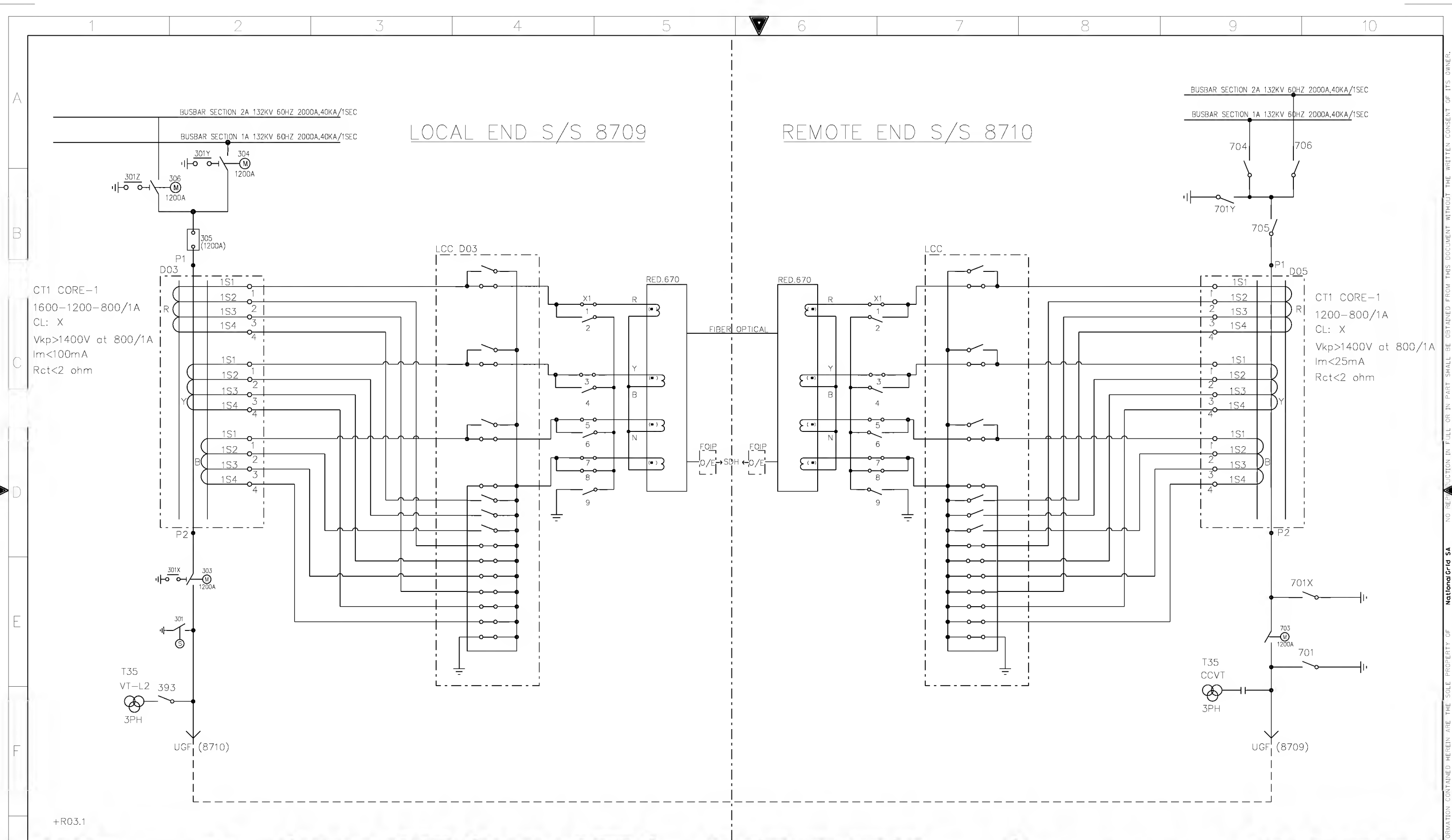
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

CURRENT TRANSFORMER INPUTS -87L-1
132kV UGF-8710 RELAY PANEL-1 +R03.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء					نقل الكهرباء	
					National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
-	C421	CD-322919		SHT	CONT.	01
				221	222	



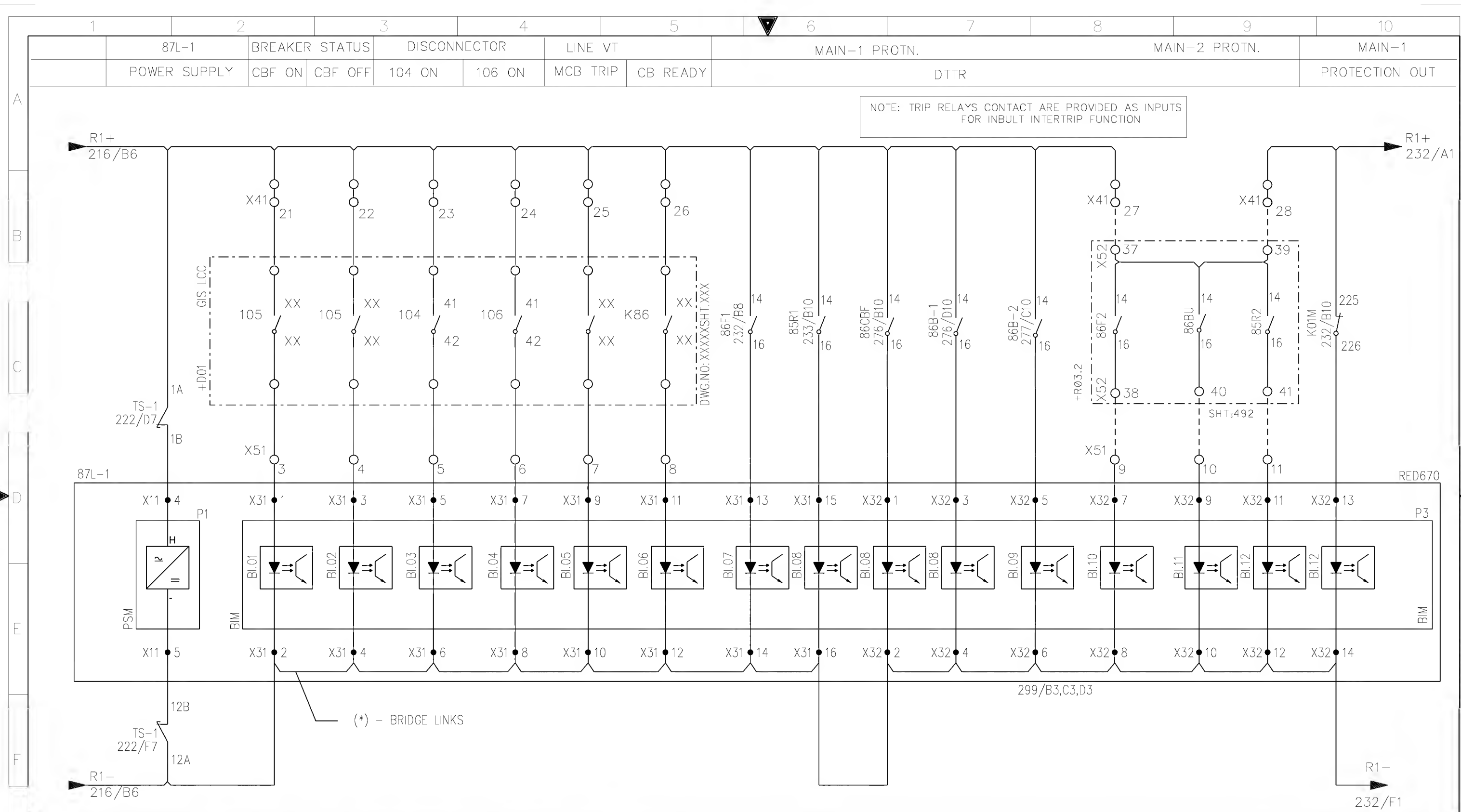
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		VOLTAGE TRANSFORMER INPUTS -87L-1		<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>											
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1													
01 13 49			FACTORY ASBUILT		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
00 13 04			FOR APPROVAL		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-		C421		CD-322919		SHT 222		CONT. 223	
REV. NO.			DATE		DESCRIPTION														01	



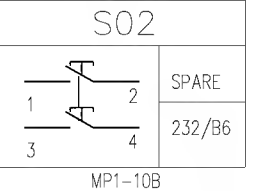
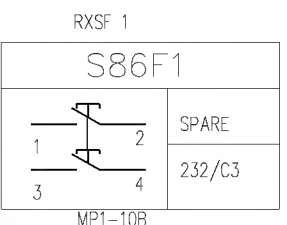
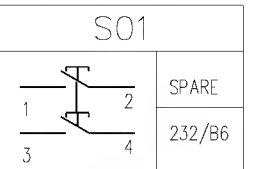
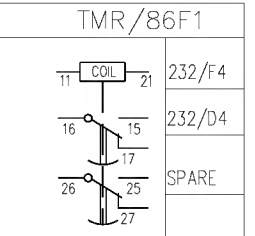
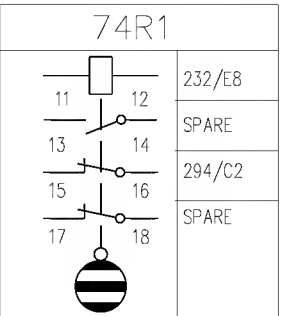
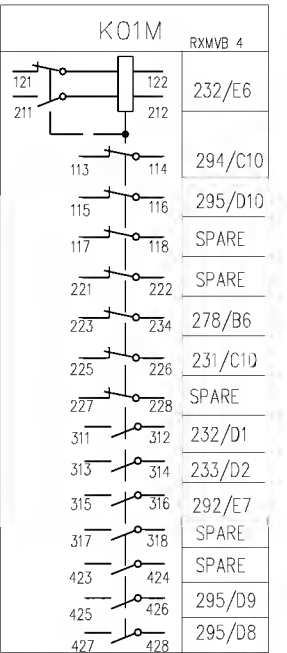
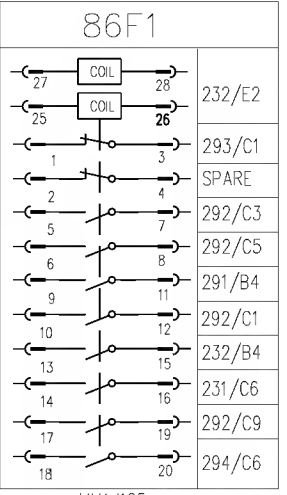
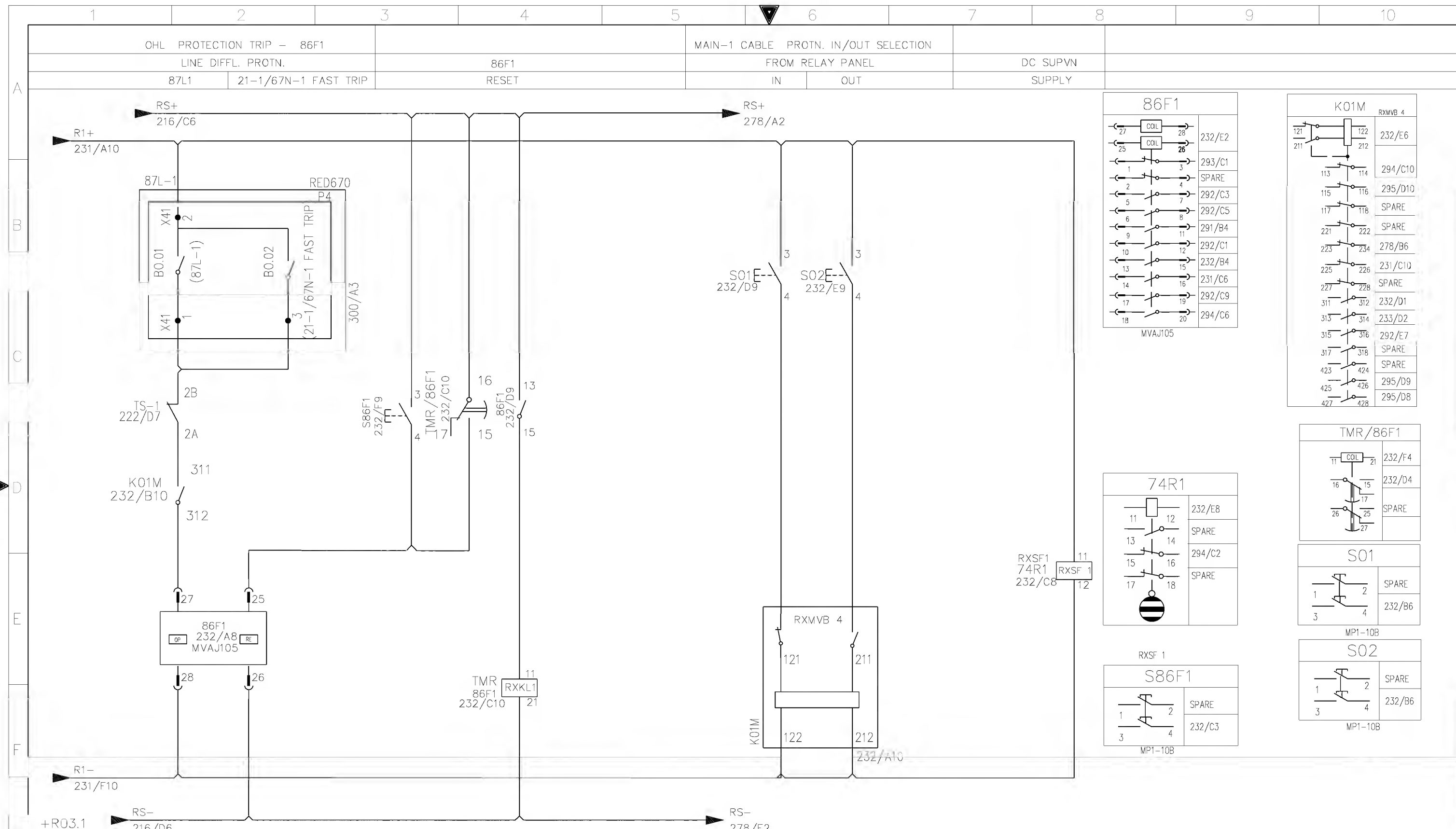
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

COMMUNICATION CIRCUITS	
132kv UGF-8710 RELAY PANEL-1 +R03.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

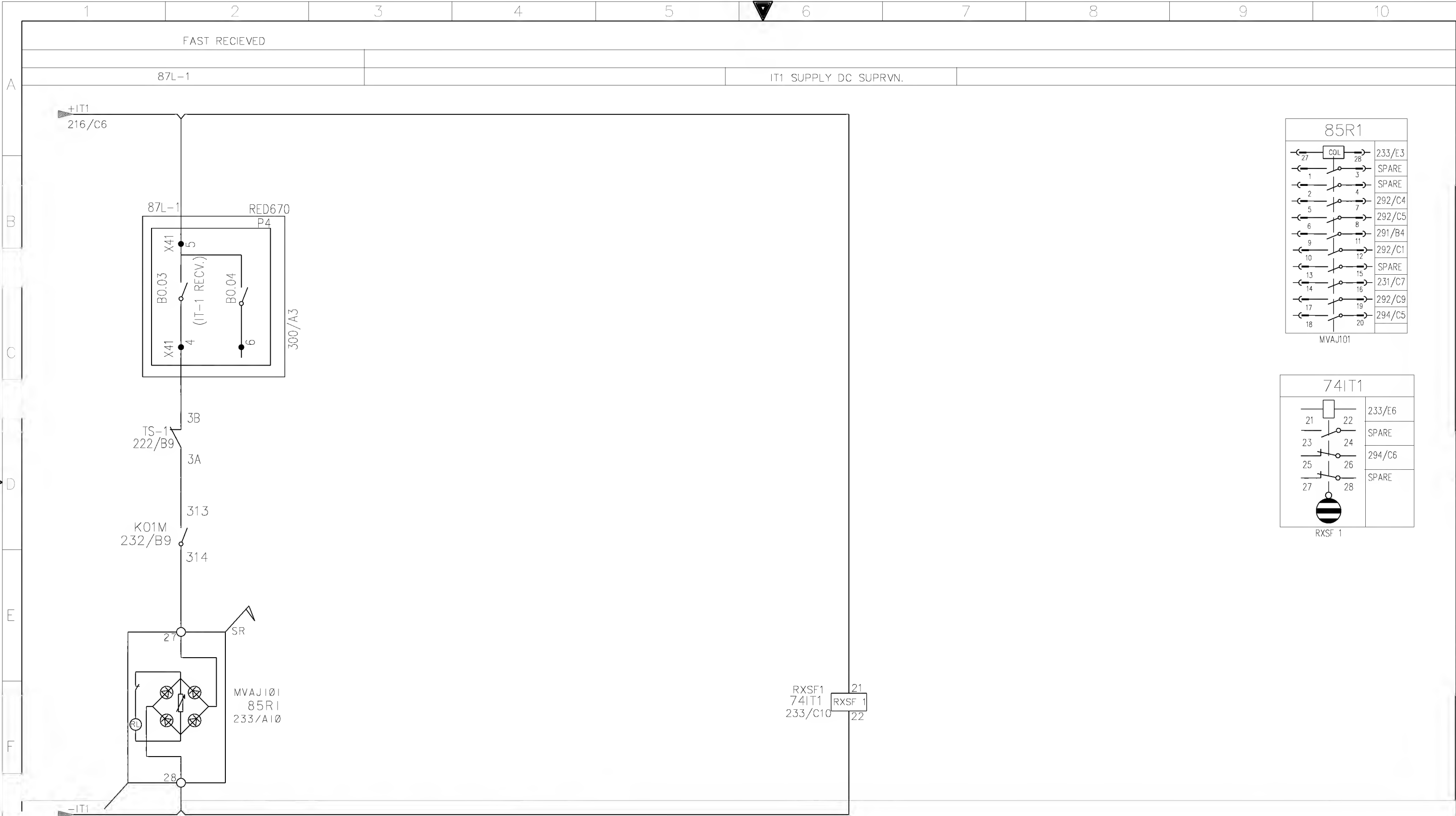
الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322919	SHT	CONT.	01
			223	231	



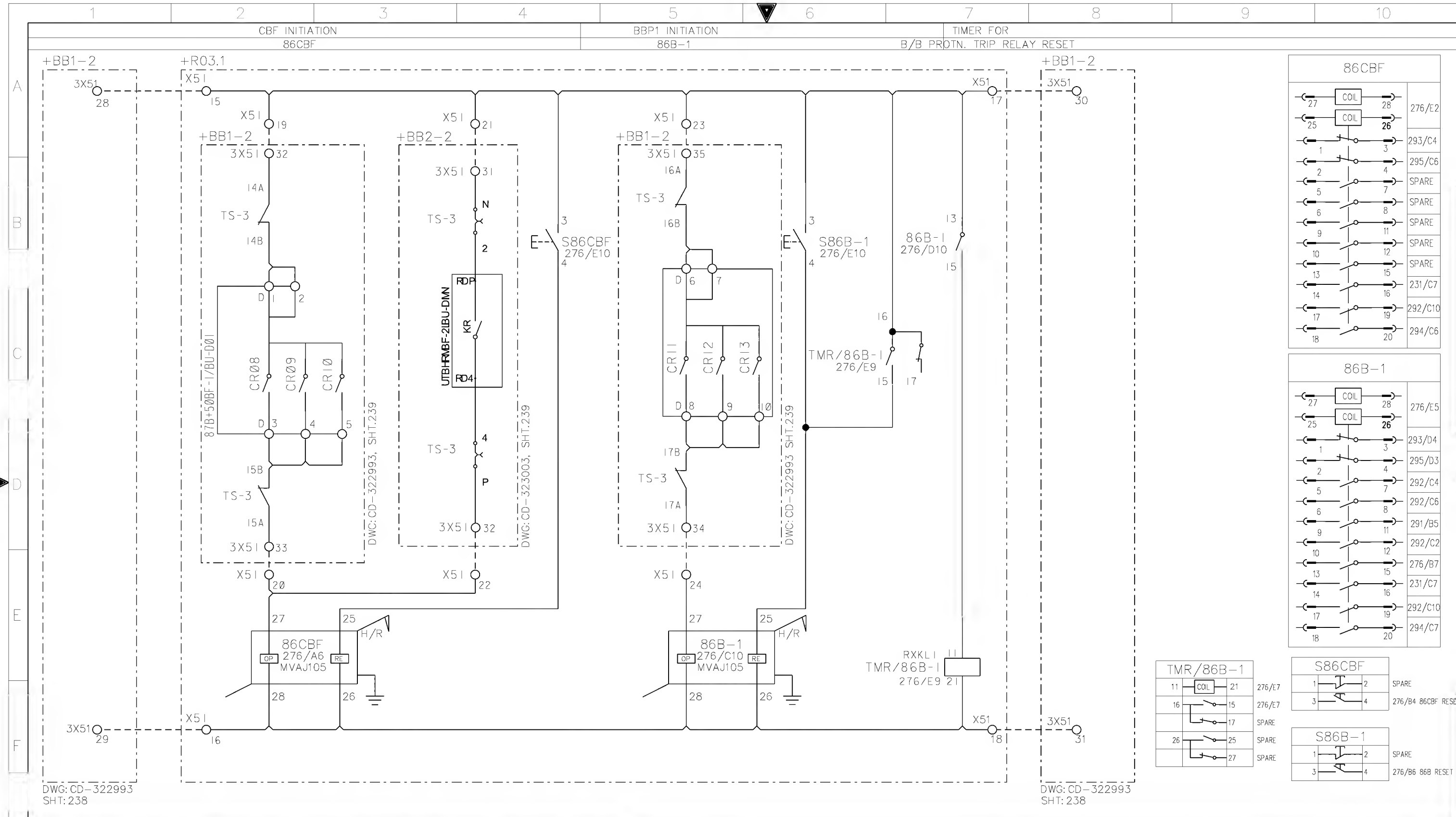
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		MAIN-1 PROTN. 87L-1 RELAY-BINARY INPUTS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>										
01		13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1												
00		13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV.NO.		
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-		C421		CD-322919		SHT CONT.		01	




AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		MAIN-1 CABLE DIFF.PROTECTION TRIP RELAY CKT.			<div><div><div>الشركة الوطنية لنقل الكهرباء</div><div>National Grid sa</div></div><div><div><div></div><div></div></div></div></div>						
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1									
01 13 49			FACTORY ASBUILT		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY							
00 13 04			FOR APPROVAL		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA							
REV. NO.			DATE		DESCRIPTION					INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
										-	C421	CD-322919		SHT 232	CONT. 233	01



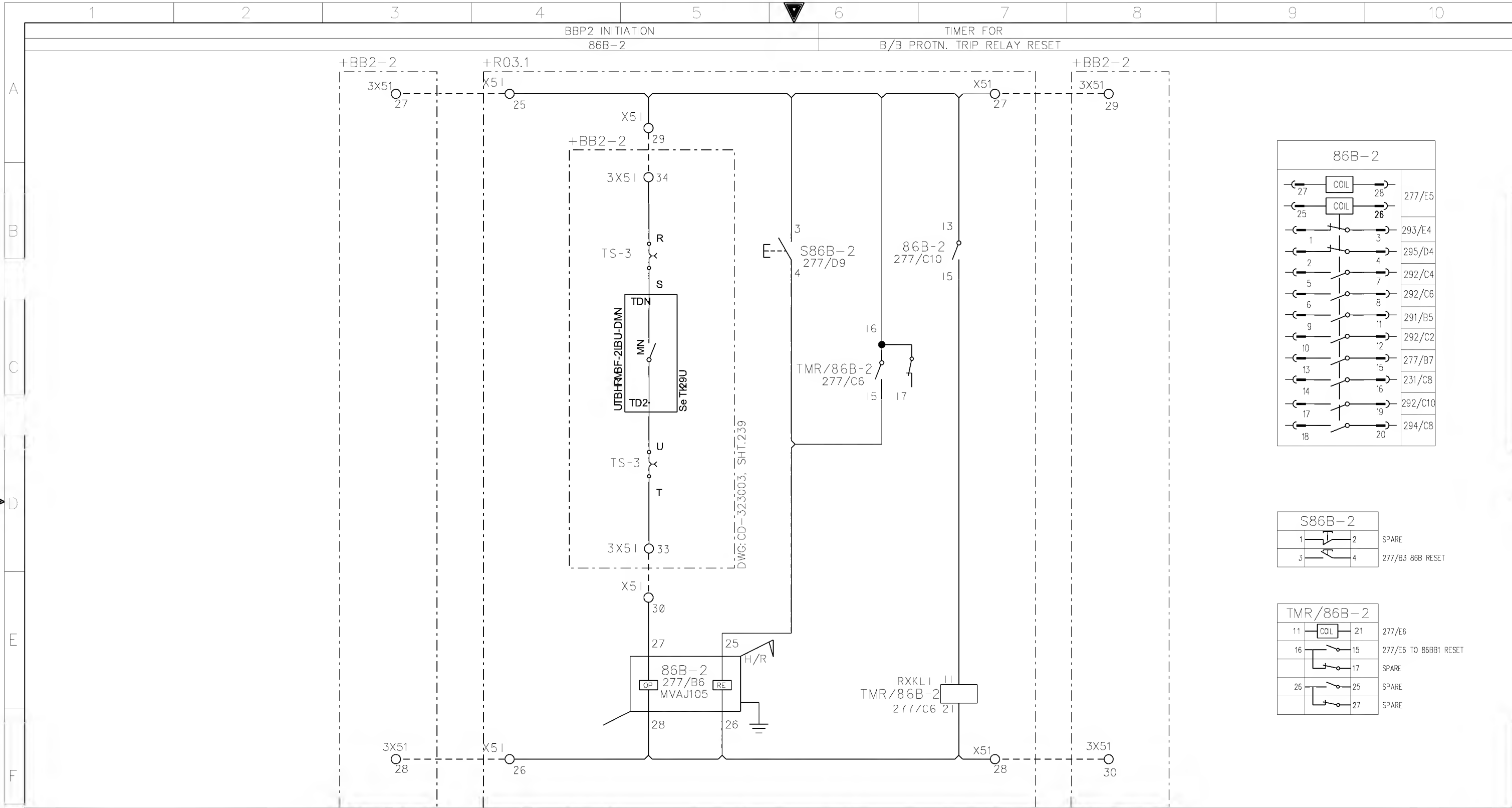
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		MAIN-1 INTER TRIP CIRCUIT		الشركة الوطنية لنقل الكهرباء نقل الكهرباء National Grid sa						
	01	13 49	FACTORY ASBUILT FOR APPROVAL		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04			DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY						SHT	CONT.	
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322919		233	246	01



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CBF-1/2 & BUSBAR PROTN-1 TRIP RELAY CIRCUIT			<div><div>الشركة الوطنية لنقل الكهرباء</div><div>نقل الكهرباء</div><div>National Grid sa</div></div>				
			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>				132kV UGF-8710 RELAY PANEL-1 +R03.1							
01 13 49 FACTORY ASBUILT			DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____				S/S 8709-132/13.8KV IN AL-KHARJ CITY							
00 13 04 FOR APPROVAL							S/S 8709-132/13.8KV IN AL-KHARJ CITY			INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.				
REV. NO. DATE DESCRIPTION			OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>				RIYADH SAUDI ARABIA			- C421 CD-322919 276 277 01				

NG/D2-D (2012/01)

DMS VECTOR NGD200

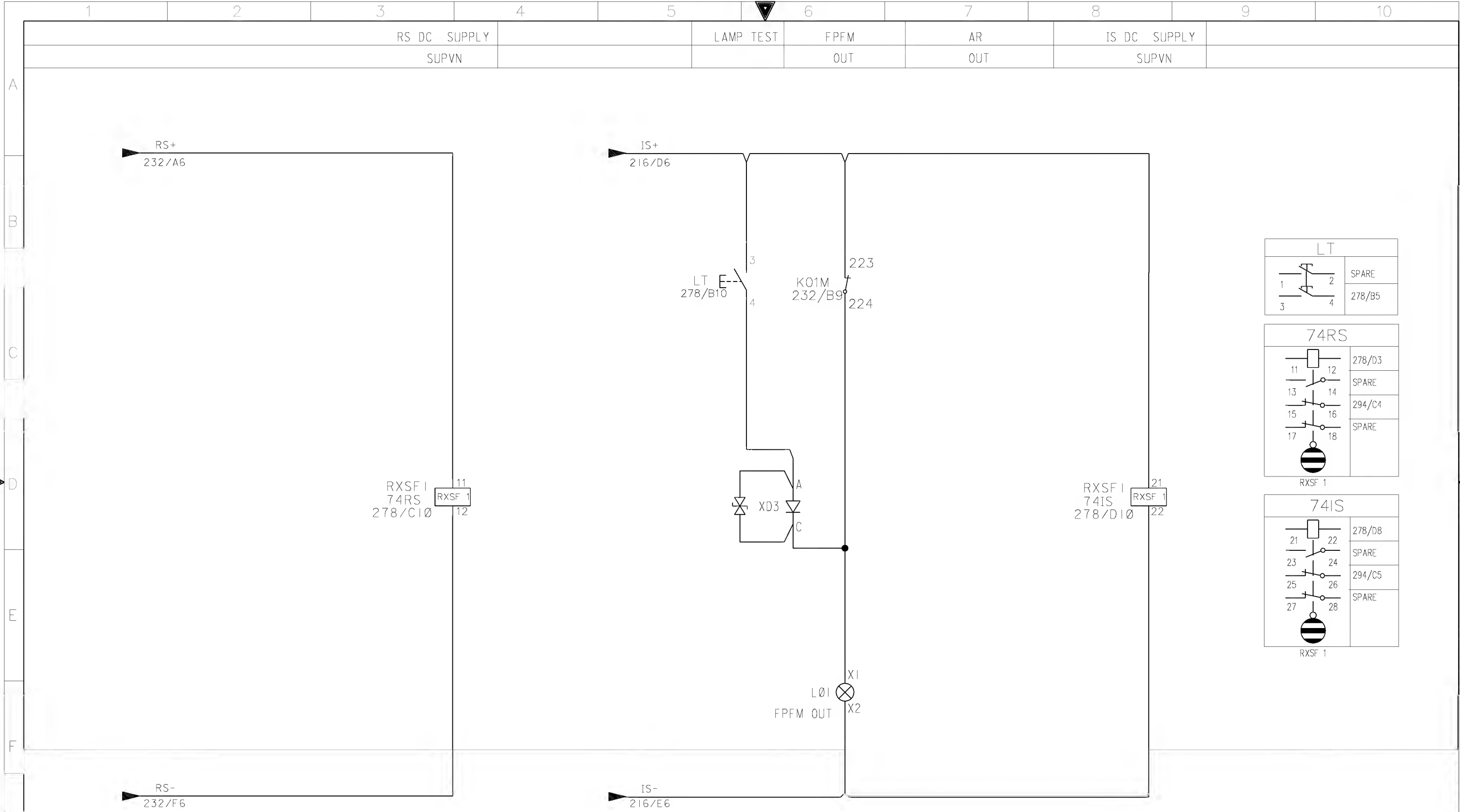


86B-2			
27	COIL	28	277/E5
25	COIL	26	
1		3	293/E4
2		4	295/D4
5		7	292/C4
6		8	292/C6
9		11	291/B5
10		12	292/C2
13		15	277/B7
14		16	231/C8
17		19	292/C10
18		20	294/C8

S86B-2			
1		2	SPARE
3		4	277/B3 86B RESET

TMR/86B-2			
11	COIL	21	277/E6
16		15	277/E6 TO 86BB1 RESET
		17	SPARE
26		25	SPARE
		27	SPARE

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		BUSBAR PROTN-2 TRIP RELAY CIRCUIT		<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>				
			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		132kV UGF-8710 RELAY PANEL-1 +R03.1								
01	13 49	FACTORY ASBUILT	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
00	13 04	FOR APPROVAL	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		-		C421	CD-322919	SHT		CONT.
REV. NO.	DATE	DESCRIPTION									277		278
													01



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

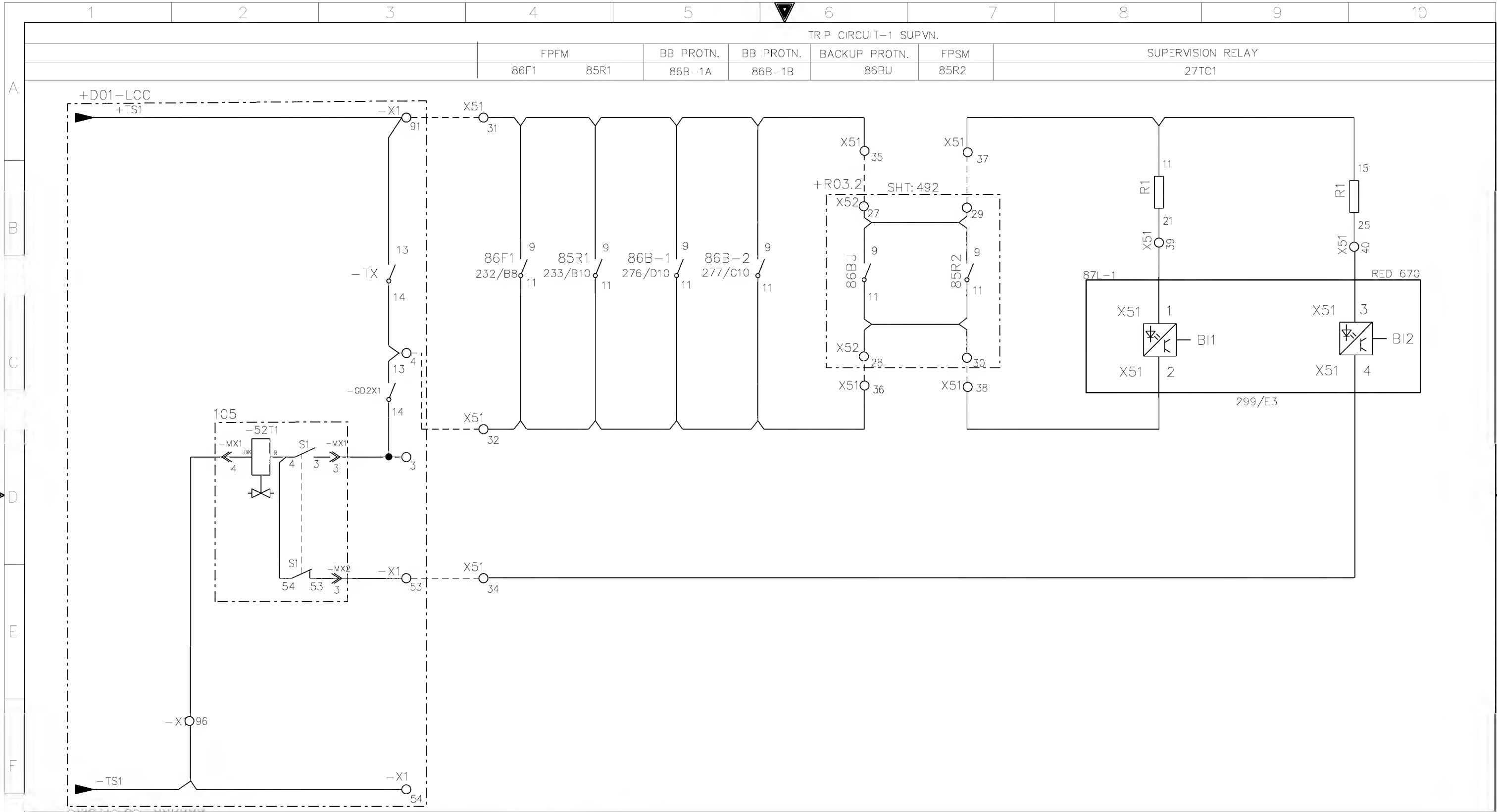
BUSBAR PROTN-2 TRIP RELAY CIRCUIT

132kV UGF-8710 RELAY PANEL-1 +R03.1

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				
National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	SHT 278	CONT. 291
				01



DWG. NO. CD=XXXXXX
SHT. XX

+R03.1

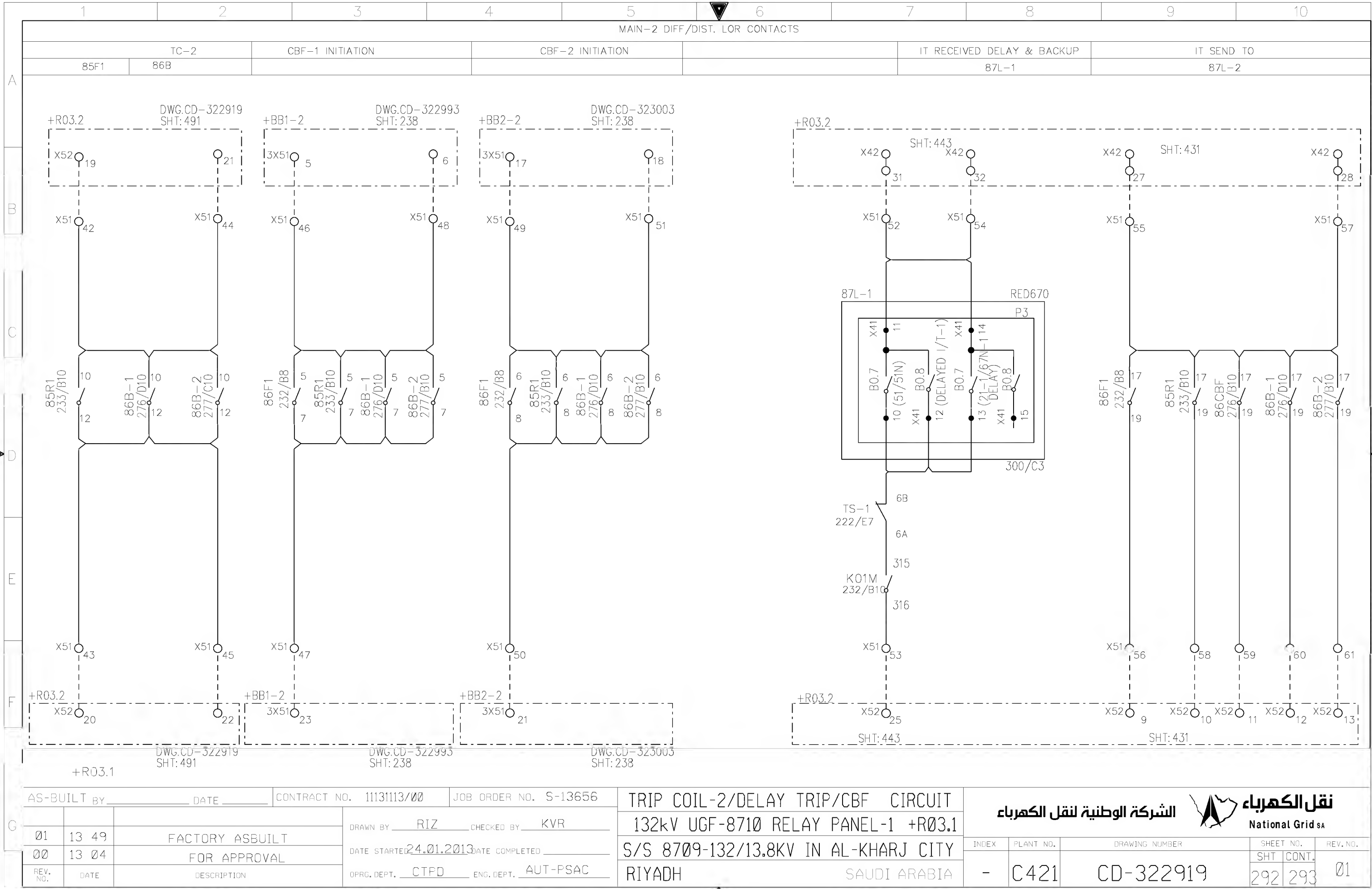
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

TRIP COIL-1 SUPERVSION CIRCUIT
132kV UGF-8710 RELAY PANEL-1 +R03.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	SHT 291	CONT. 292 01

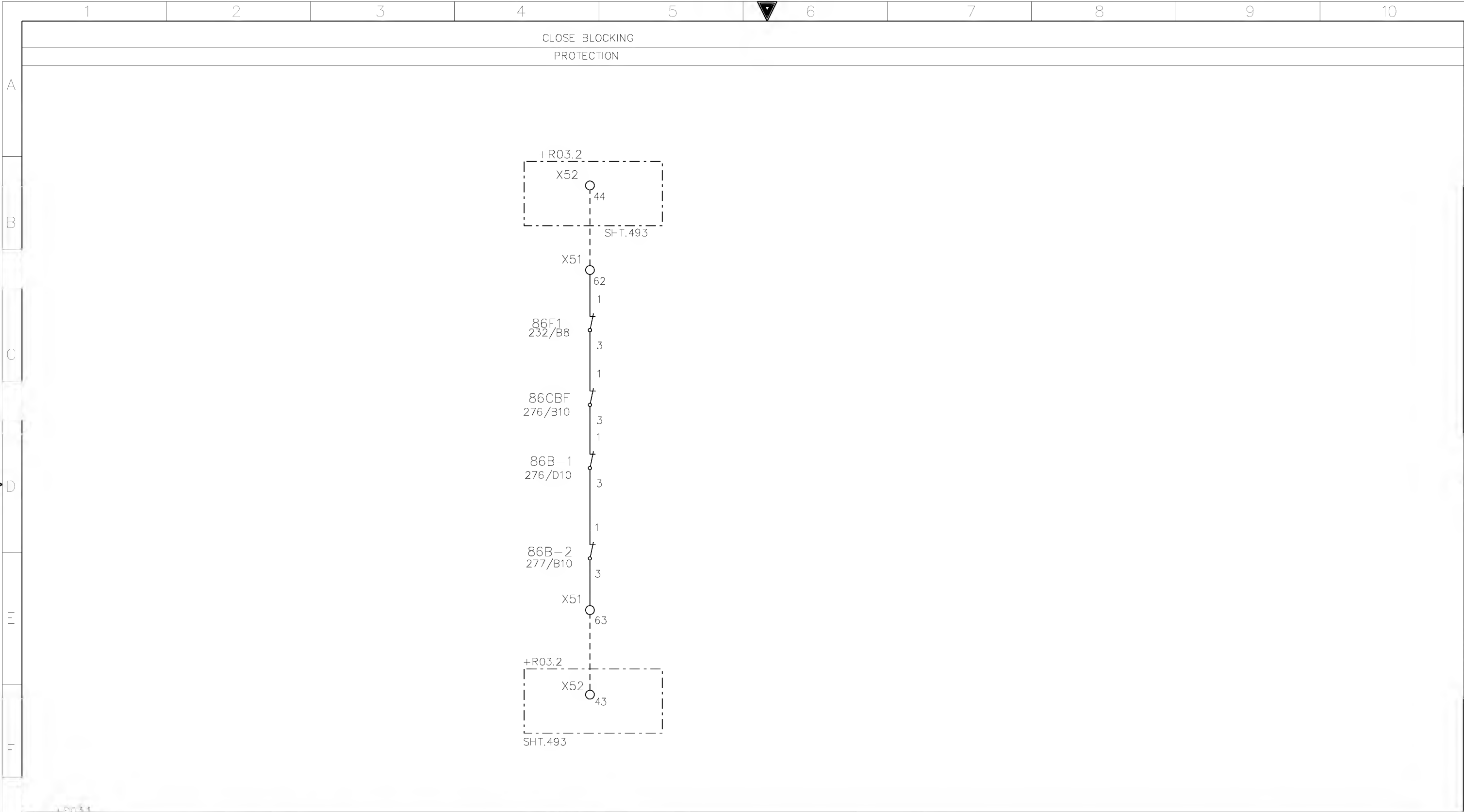


AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

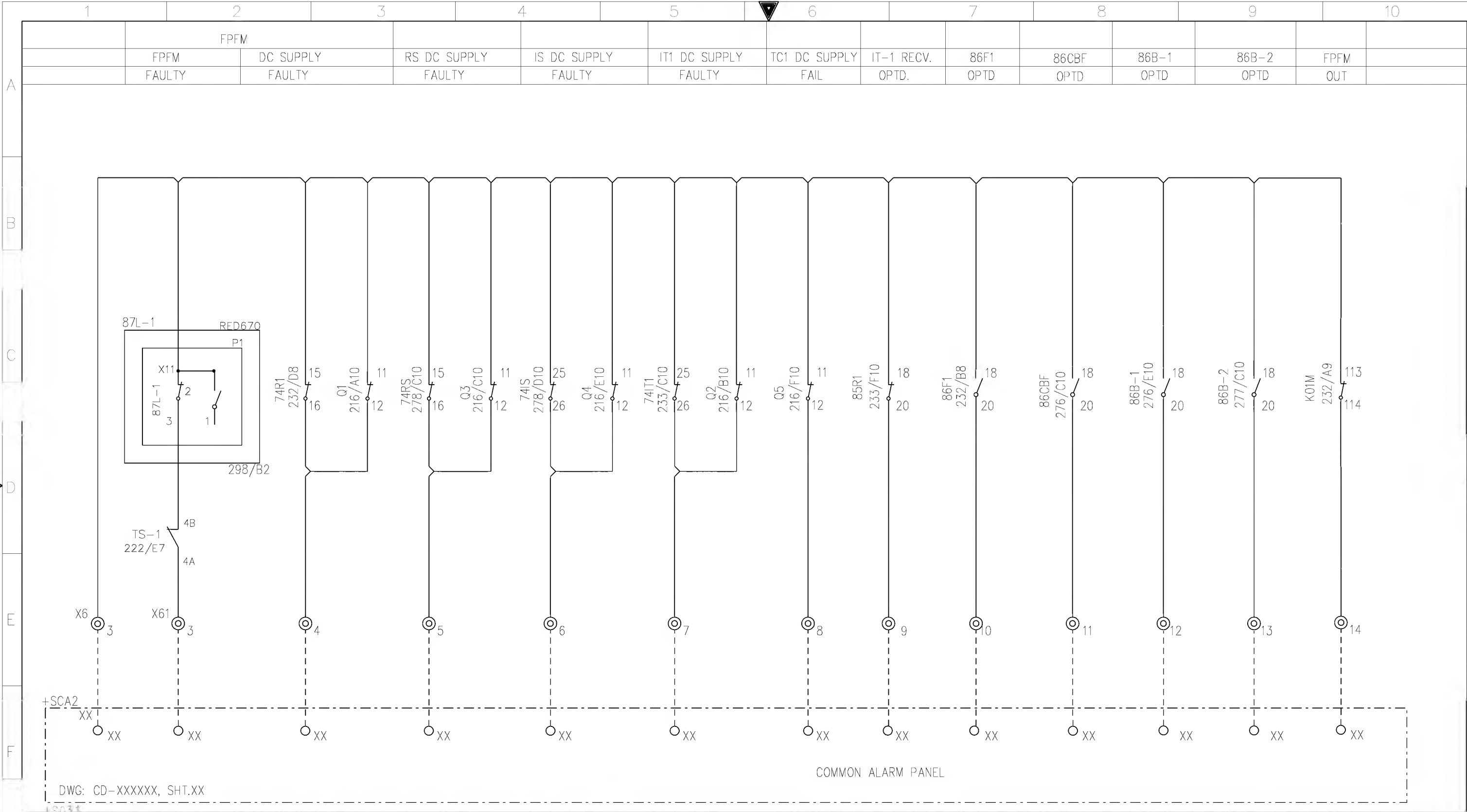
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00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

TRIP COIL-2/DELAY TRIP/CBF CIRCUIT
132kV UGF-8710 RELAY PANEL-1 +R03.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

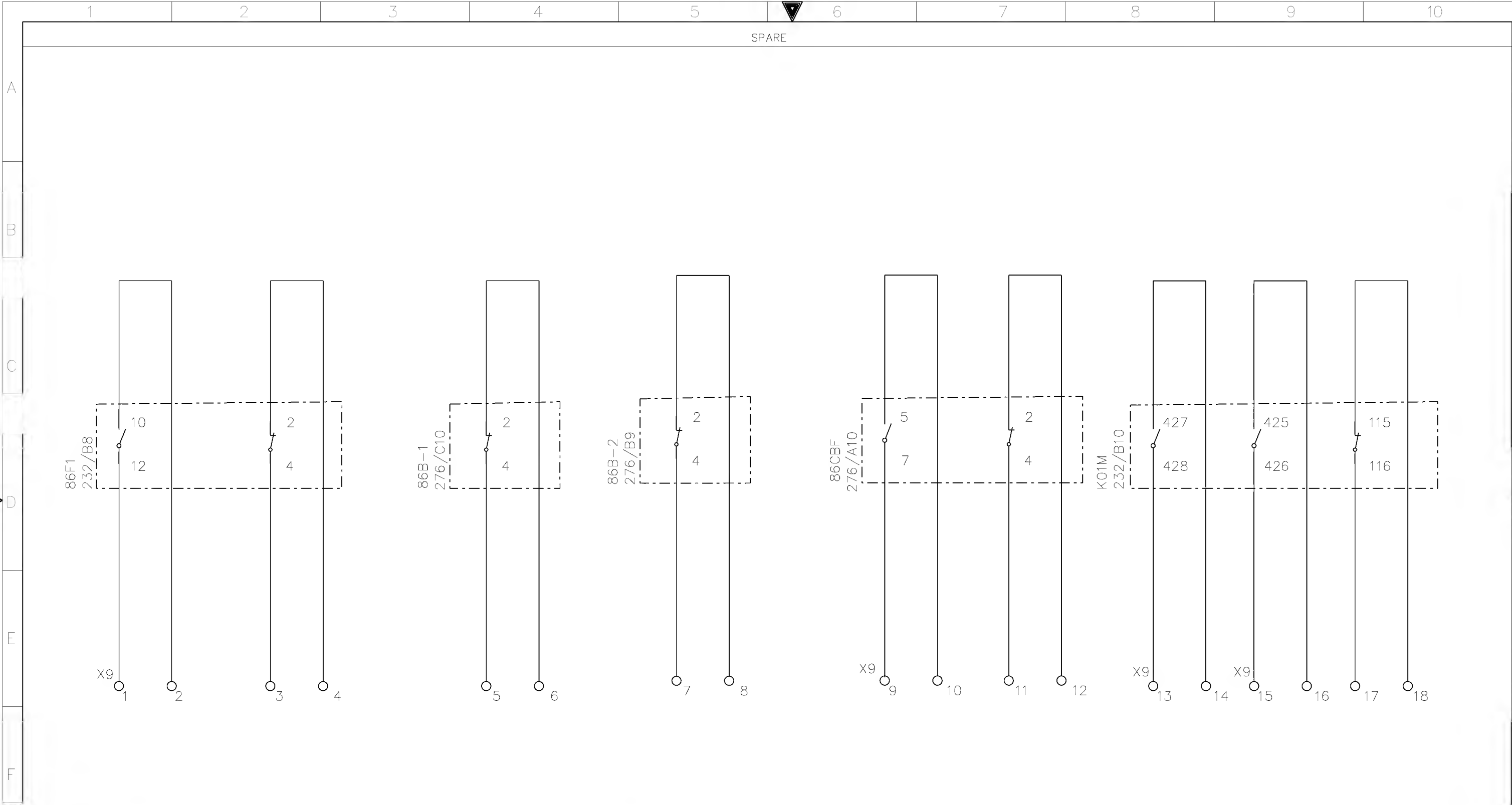
الشركة الوطنية لنقل الكهرباء		National Grid sa		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	292	01



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CLOSE BLOCK CIRCUIT		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
01 13 49 FACTORY ASBUILT			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1								
00 13 04 FOR APPROVAL			DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY								
REV. NO. DATE DESCRIPTION			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
									-	C421	CD-322919		SHT 293	CONT. 294	01



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMON ALARM CIRCUITS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>					
G	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1							
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY							
REV. NO.		DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
									-	C421	CD-322919	SHT 294 CONT. 295		01



+R03.1

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

SPARE CONTACTS	
132kV UGF-8710 RELAY PANEL-1 +R03.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

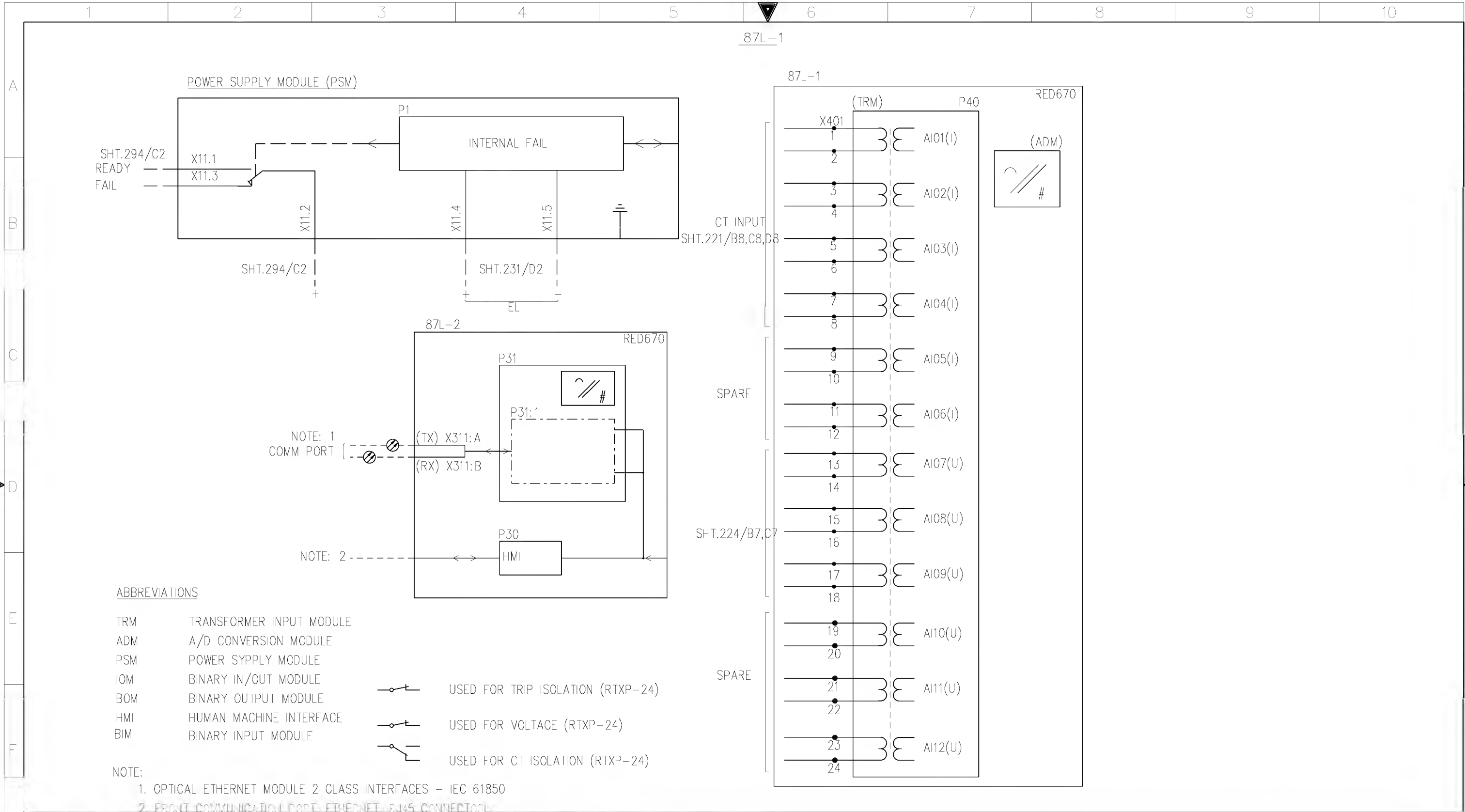
الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
-	C421	CD-322919		SHT	CONT.
				295	298
				REV. NO.	
				01	


NG/D2-D (2012/01)

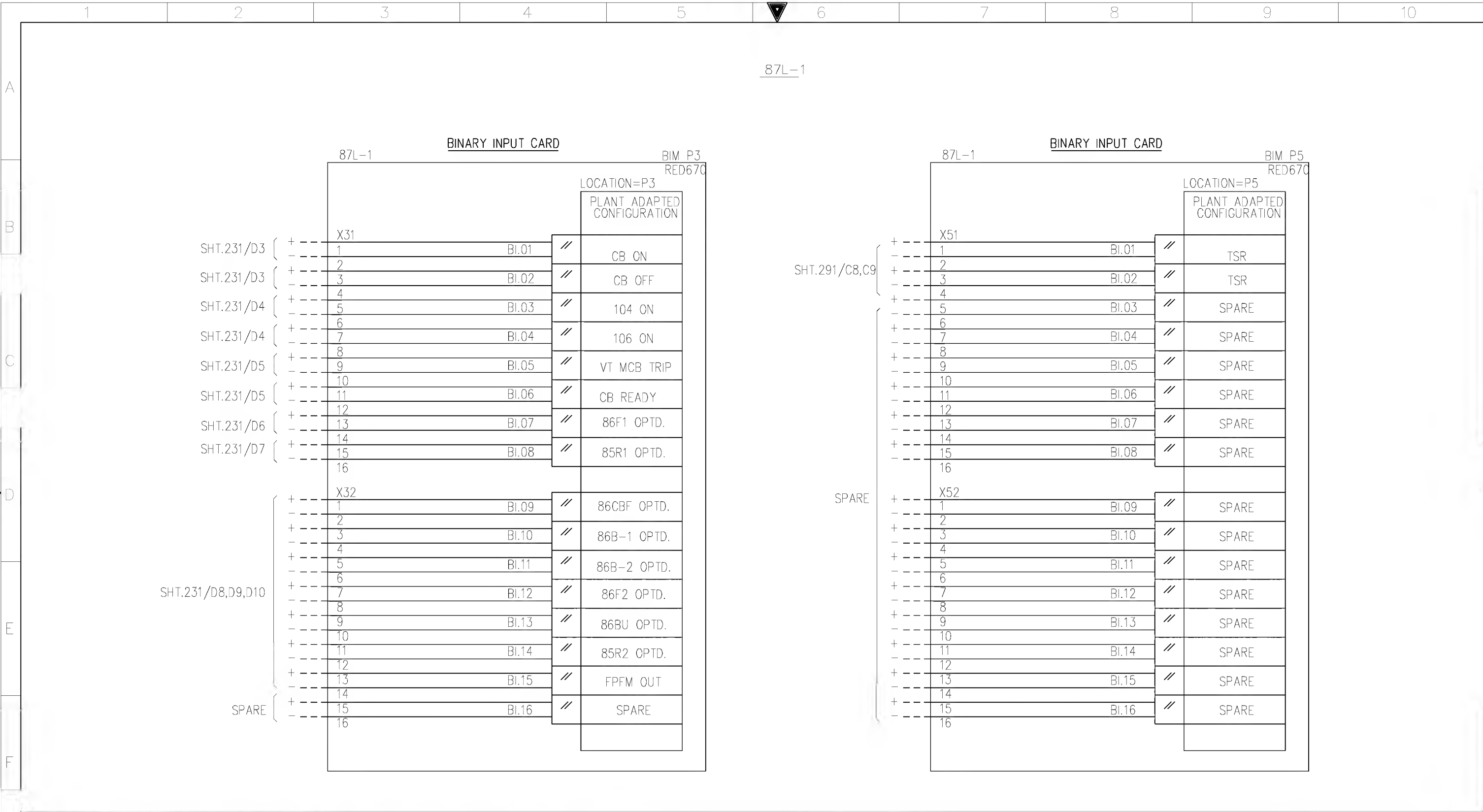
DMS


VECTOR

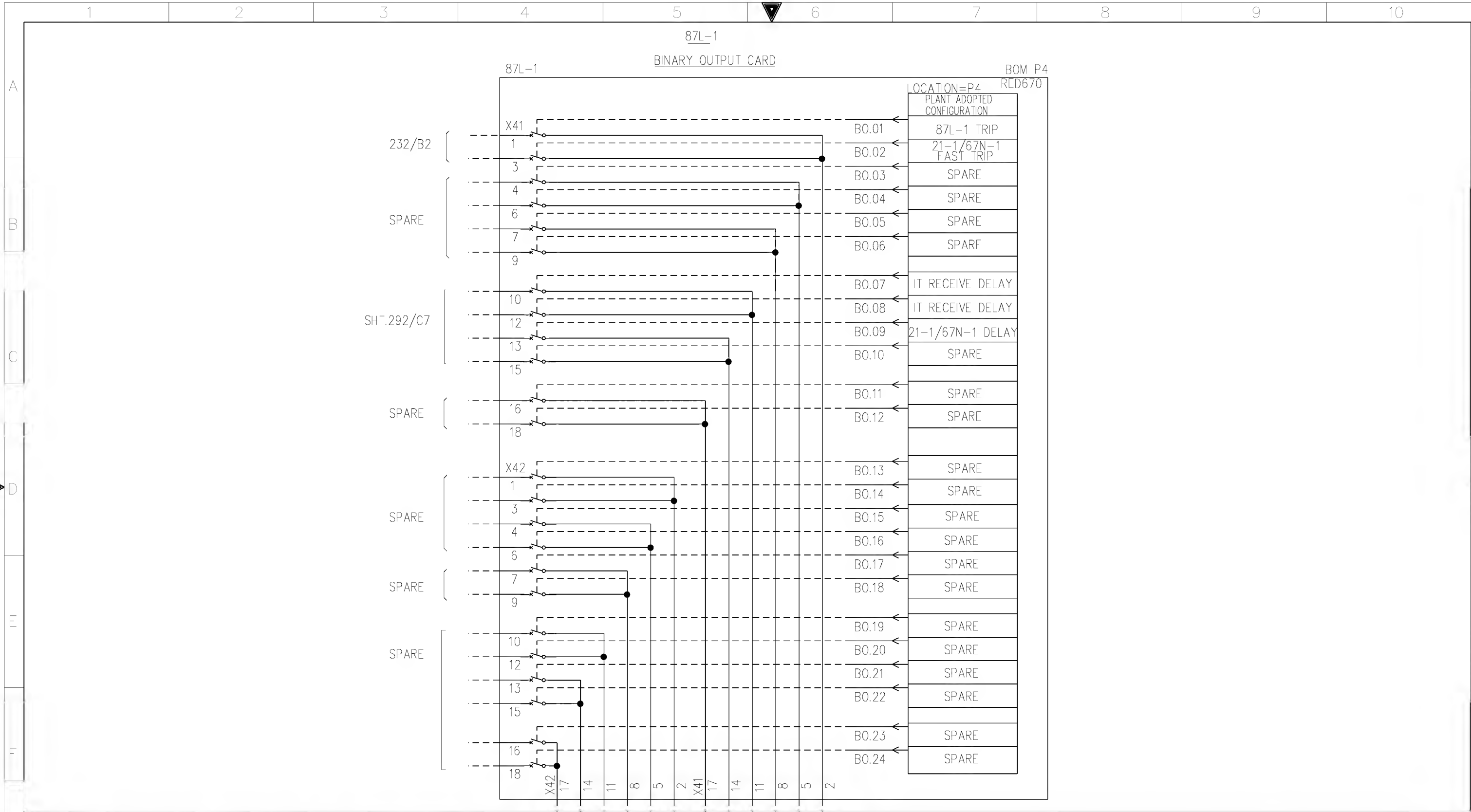
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		BLOCK REFERENCE		الشركة الوطنية لنقل الكهرباء		 نقل الكهرباء National Grid SA							
G	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY											
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTFD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA											
										-	C421	CD-322919		298	299	01		



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		BLOCK REFERENCE		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>							
			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>				132kV UGF-8710 RELAY PANEL-1 +R03.1									
01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____				S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>				RIYADH SAUDI ARABIA		-	C421	CD-322919		SHT	CONT.	01
REV. NO.	DATE	DESCRIPTION												299	300	



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

BLOCK REFERENCE

132kV UGF-8710 RELAY PANEL-1 +R03.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



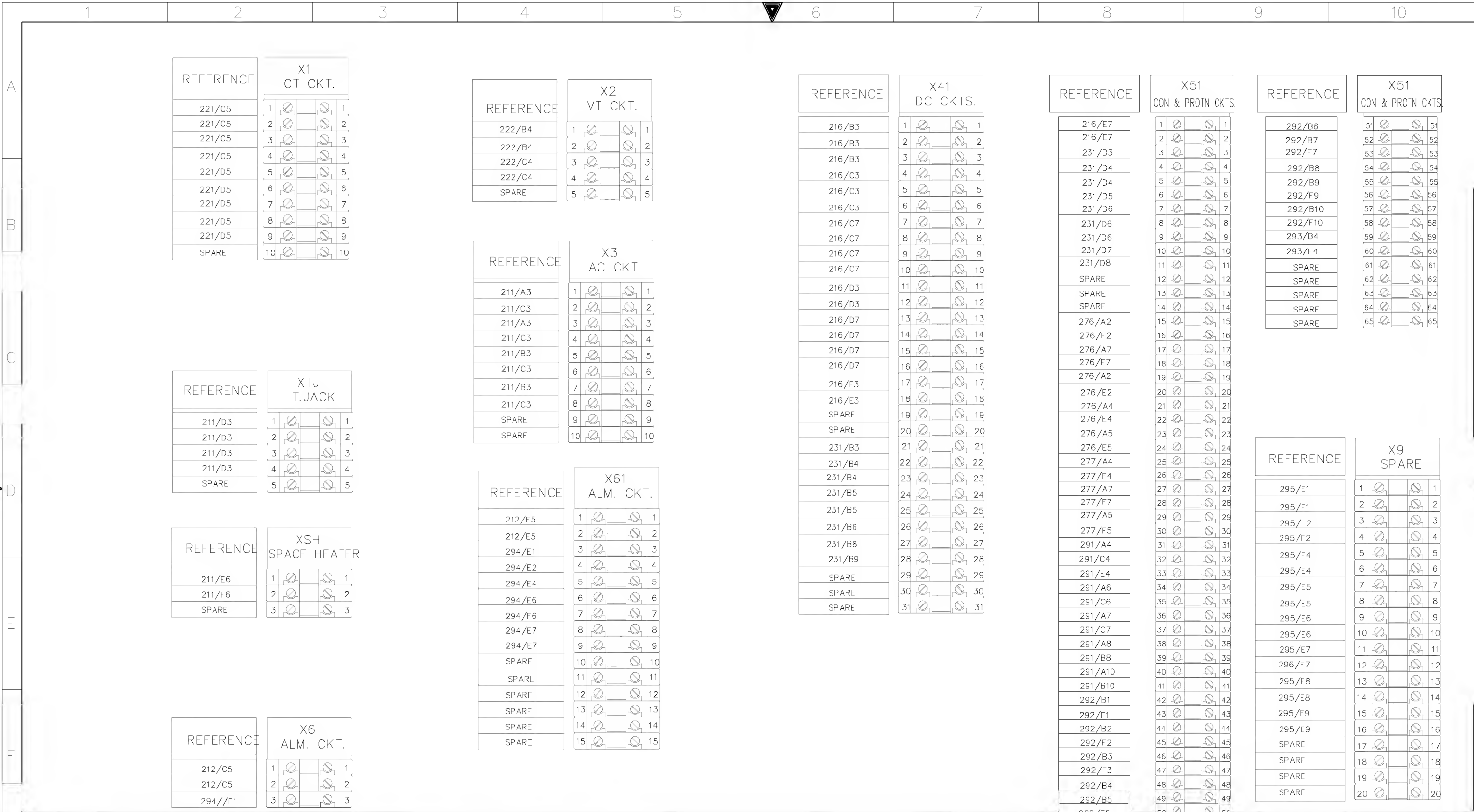
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	SHT 300	CONT. 301
				01


NG/D2-D (2012/01)

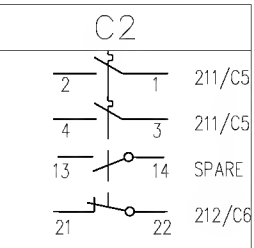
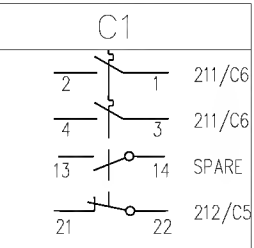
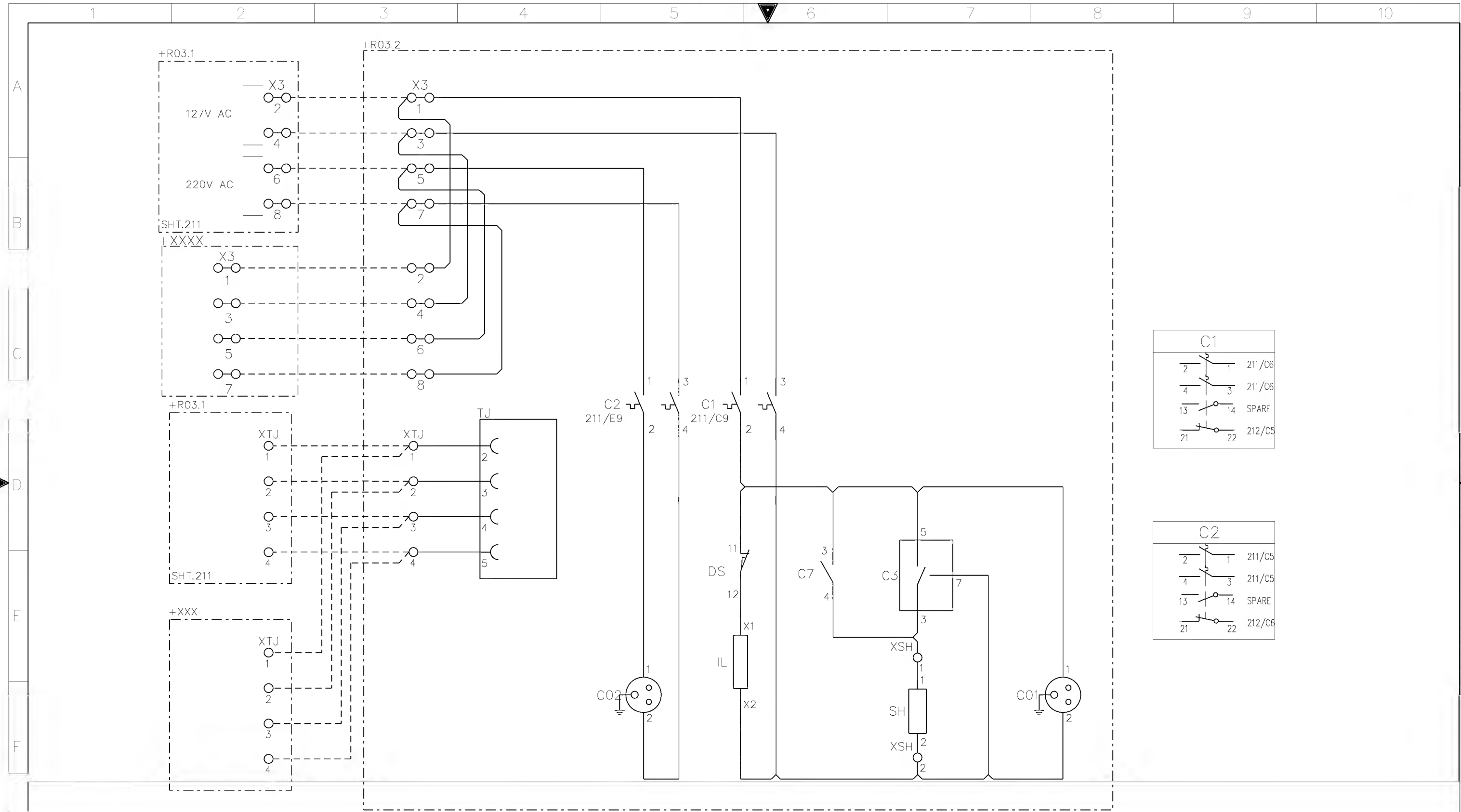
DMS

VECTOR

NGD200



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TERMINAL BLOCKS PANEL +R01.1		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>								
			DRAWN BY _____ RIZ _____ CHECKED BY _____ KVR				132kV UGF-8710 RELAY PANEL-1 +R03.1										
01 13 49			FACTORY ASBUILT		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.	
00 13 04			FOR APPROVAL		OPRG. DEPT. _____ CTFD _____ ENG. DEPT. _____ AUT-PSAC		RIYADH		SAUDI ARABIA	-	C421	CD-322919		SHT	CONT.	01	
REV. NO.			DATE		DESCRIPTION									301	411		



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

AC SUPPLY FOR ILLUMINATION & POWER SOCKET

132kV UGF-8710 RELAY PANEL-1/2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

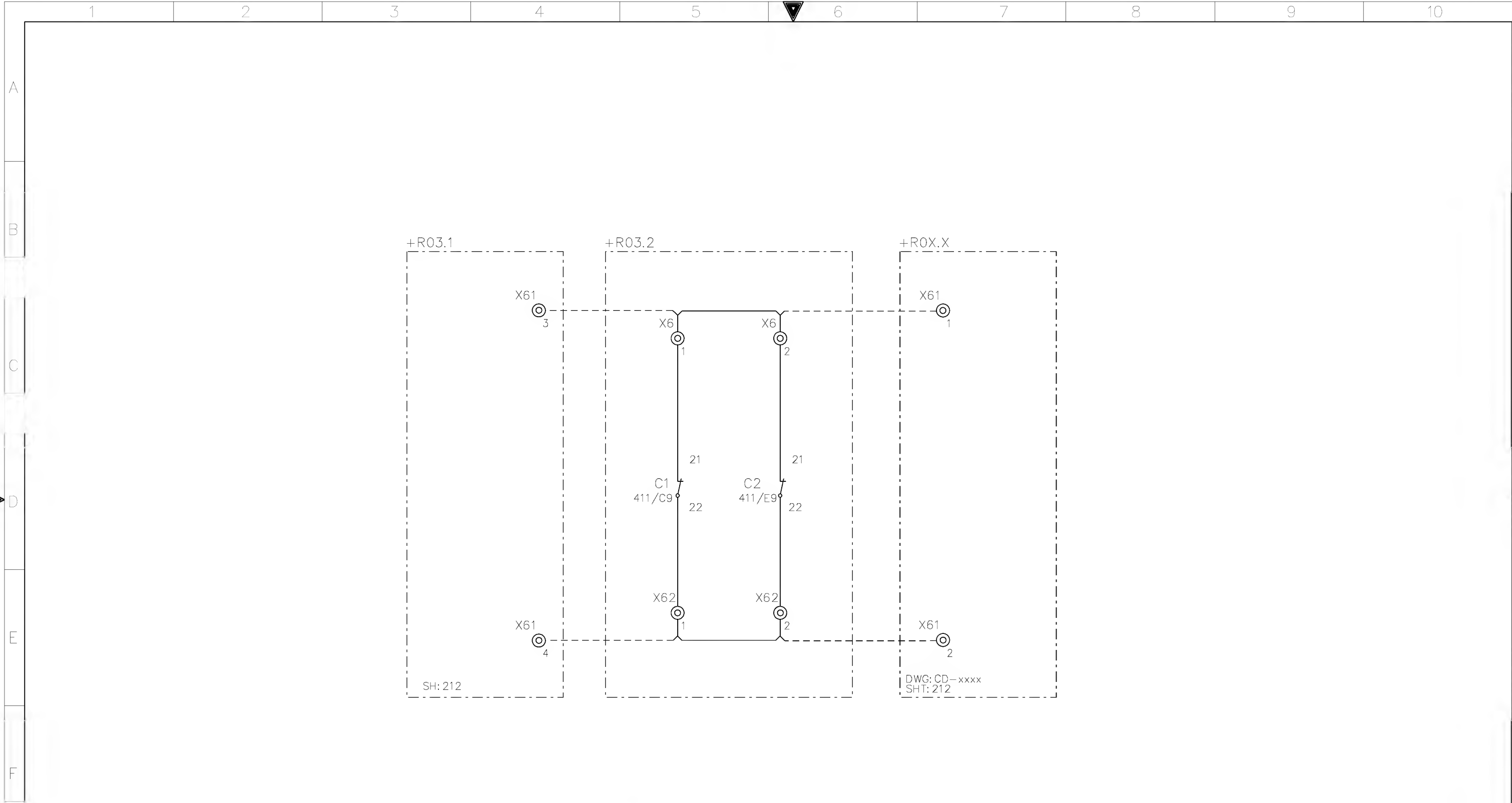
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

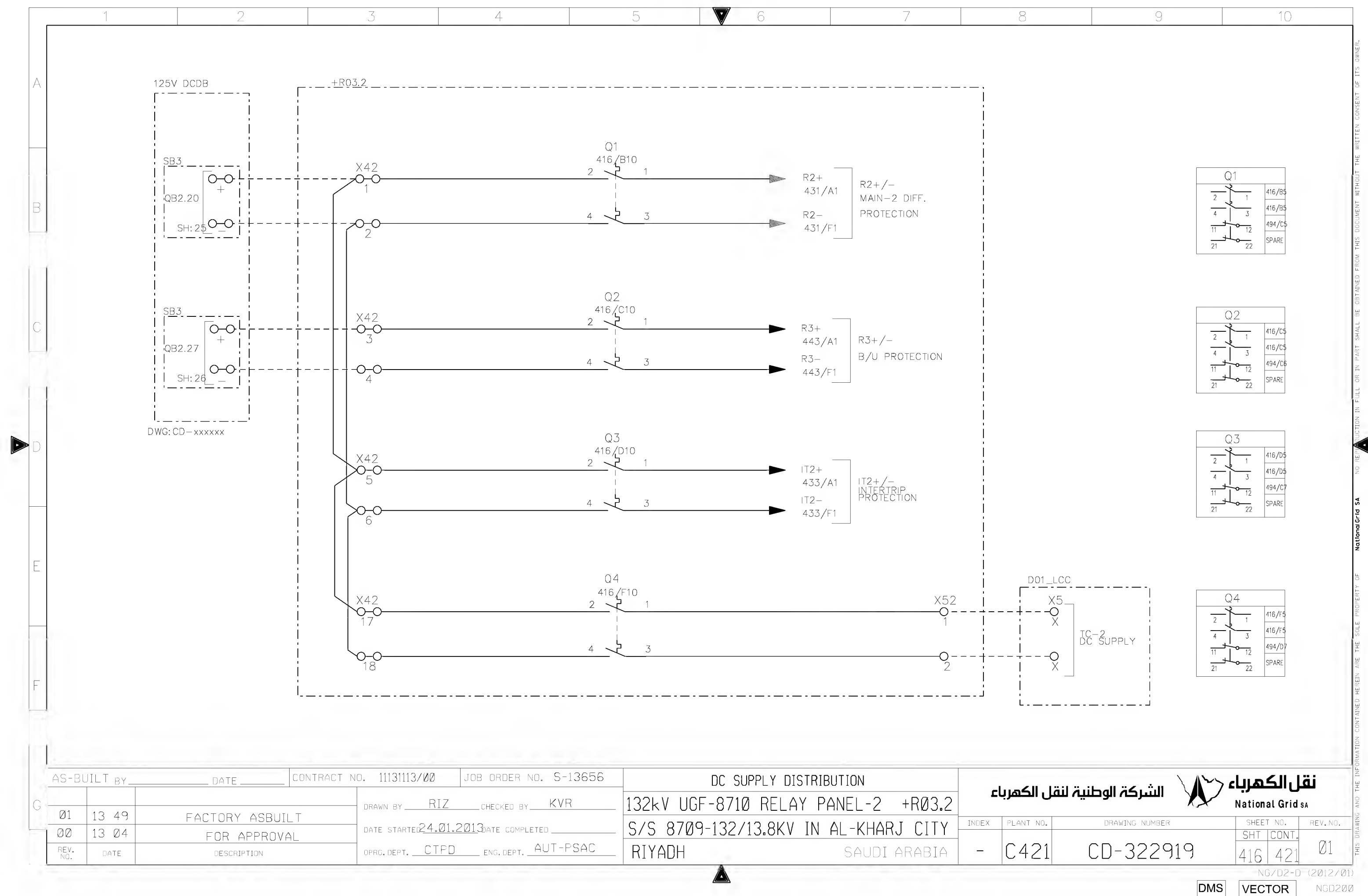
نقل الكهرباء

National Grid sa

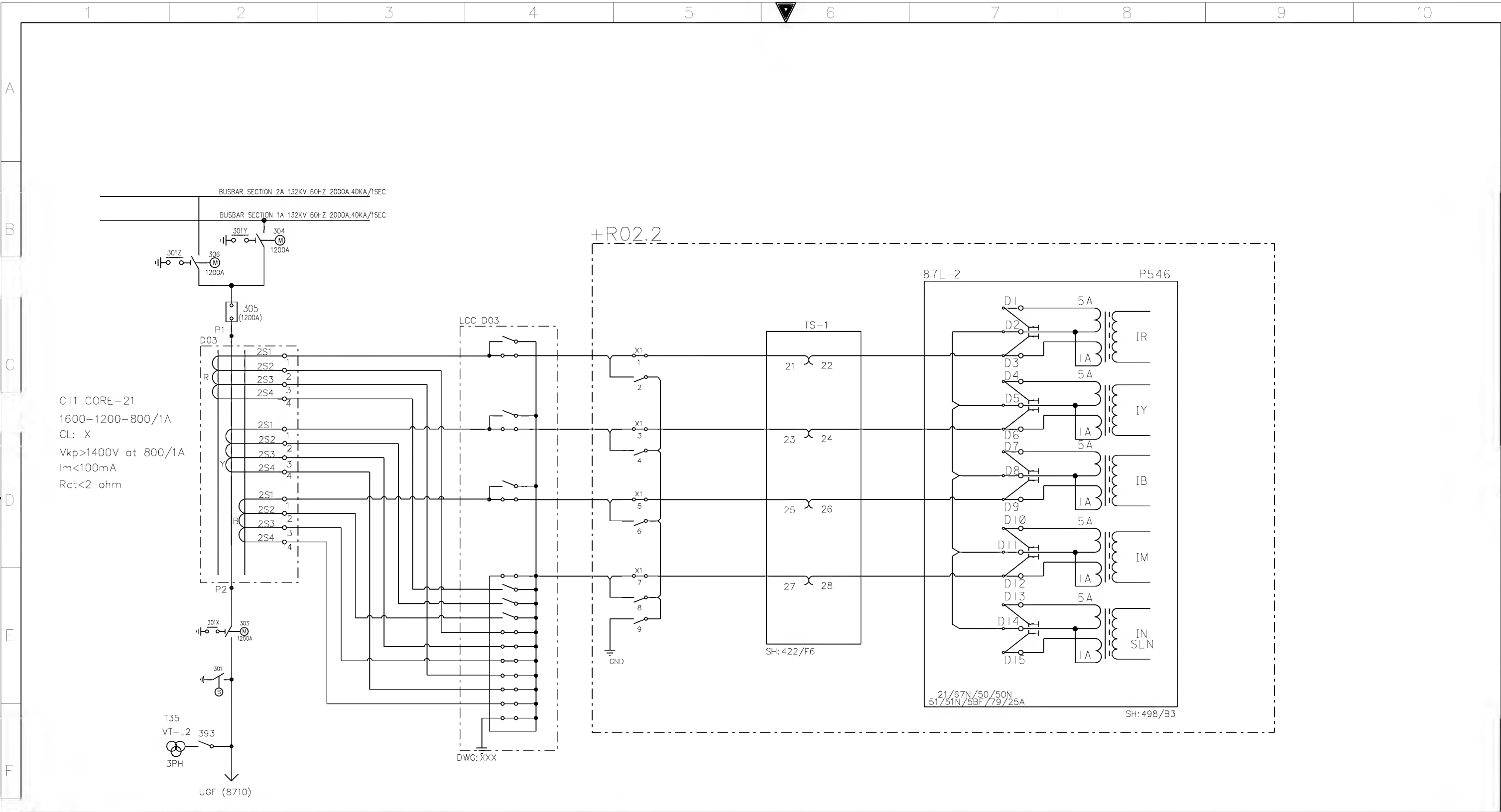
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-	C421	CD-322919	SHT 411	CONT. 412
				01



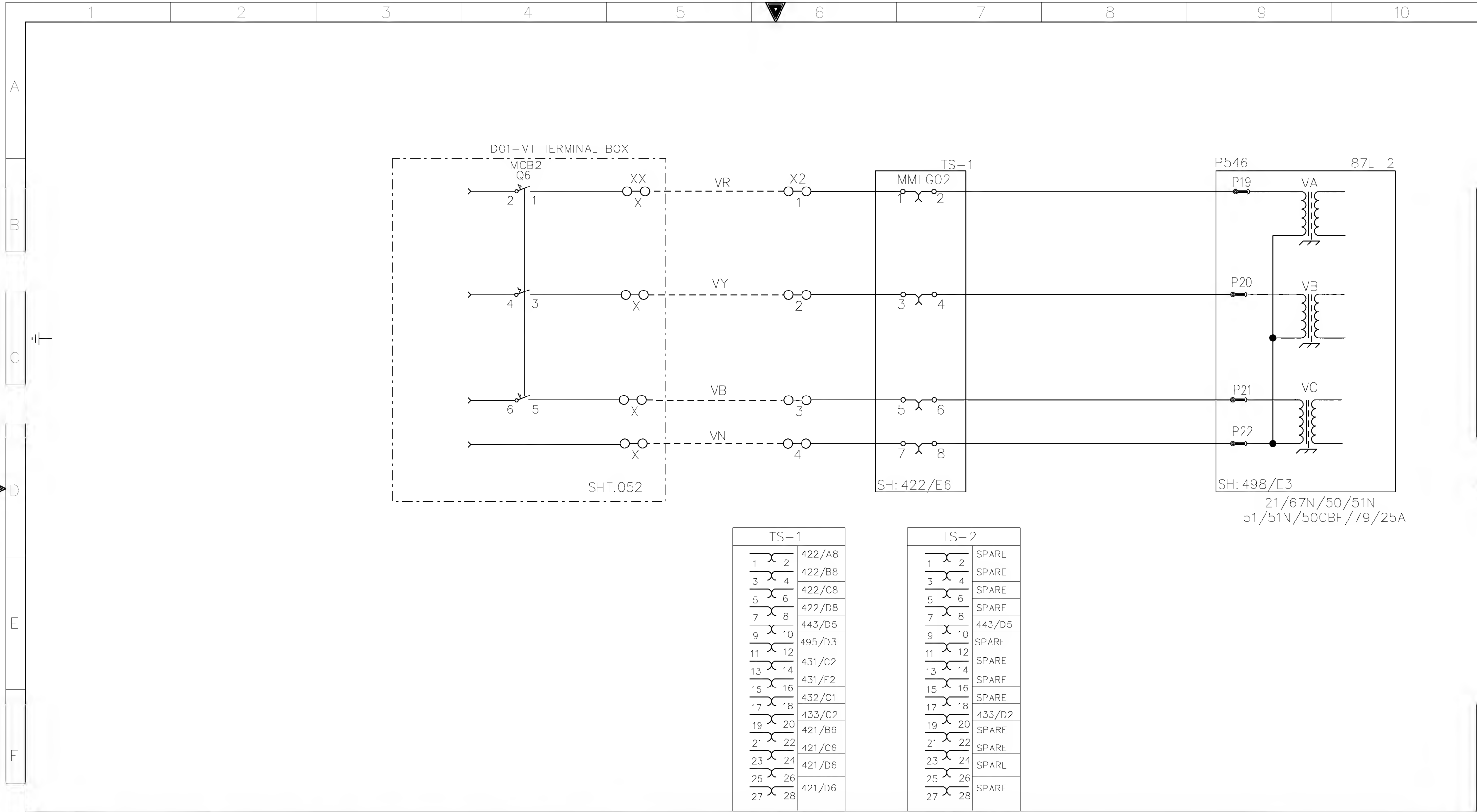
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		AC MCB AUX CONTACTS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
							132kV UGF-8710 RELAY PANEL-2 +R03.2								
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED		RIYADH SAUDI ARABIA		-	C421	CD-322919		SHT	CONT.	01
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC								412	416	



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DC SUPPLY DISTRIBUTION			<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>						
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2									
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY			INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	REV.	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			-	C421	CD-322919		SHT 416	CONT. 421	0



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CURRENT TRANSFORMER INPUTS -87L-2		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>	
			DRAWN BY RIZ CHECKED BY KVR				132kV UGF-8710 RELAY PANEL-2 +R03.2			
01 13 49			FACTORY ASBUILT		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.	
00 13 04			FOR APPROVAL		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		- C421 CD-322919 421 422 01	
REV. NO. DATE DESCRIPTION										

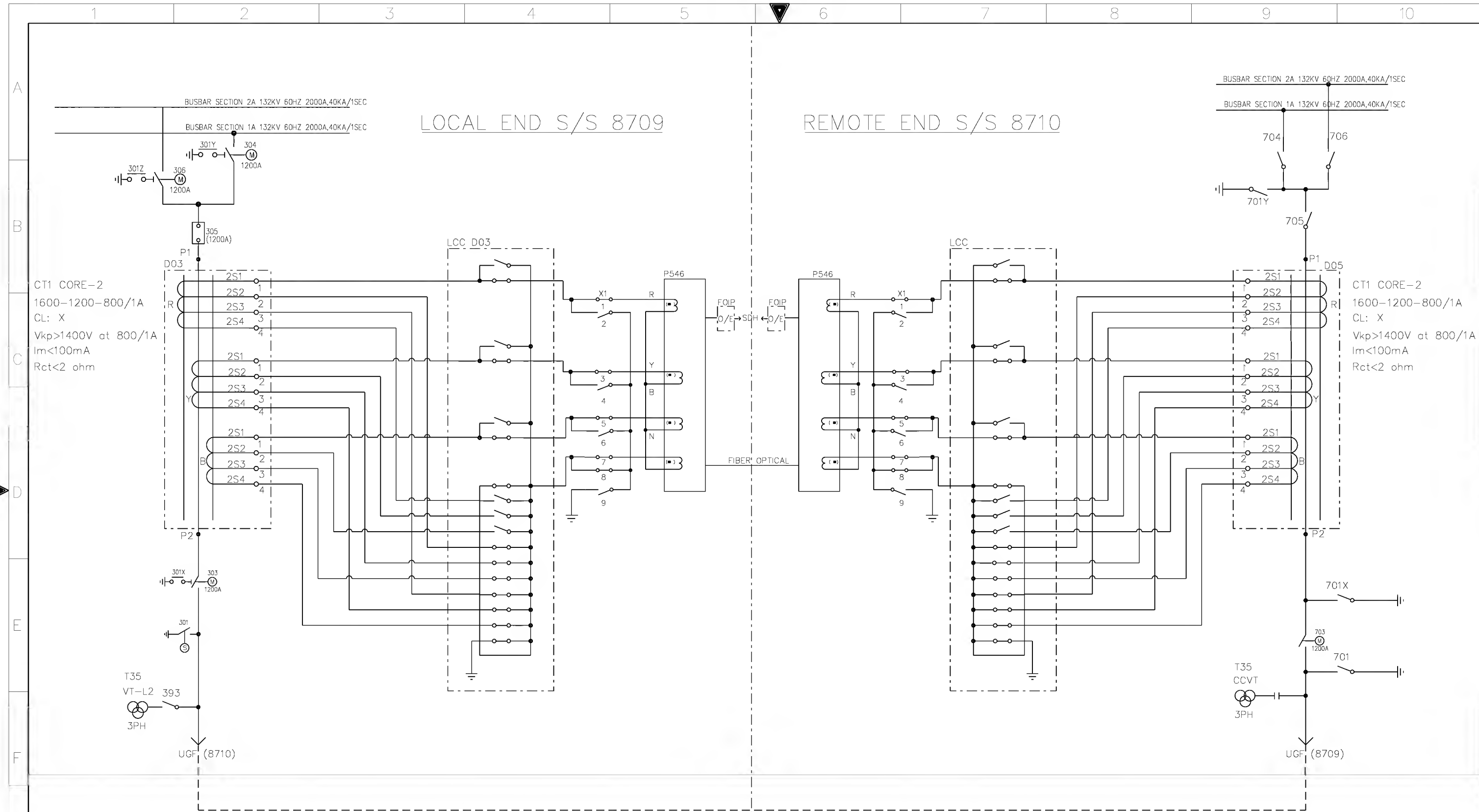


AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

VOLTAGE TRANSFORMER INPUTS -87L-2
132kV UGF-8710 RELAY PANEL-2 +R03.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
National Grid sa		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
-	C421	CD-322919	422 423
		REV. NO.	
		01	

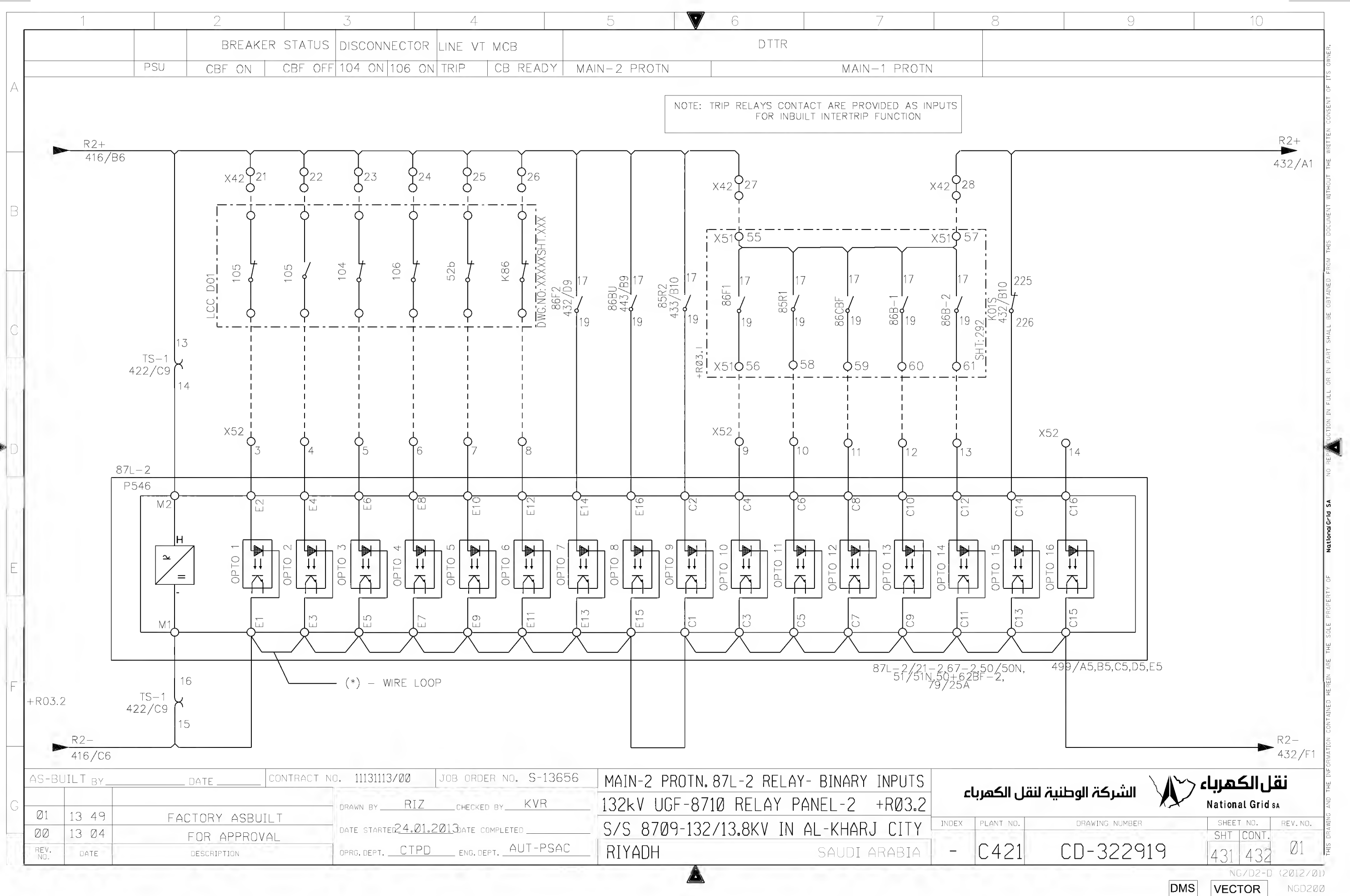


+R03.2

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	13 49	FACTORY ASBUILT	
00	13 04	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____	
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			

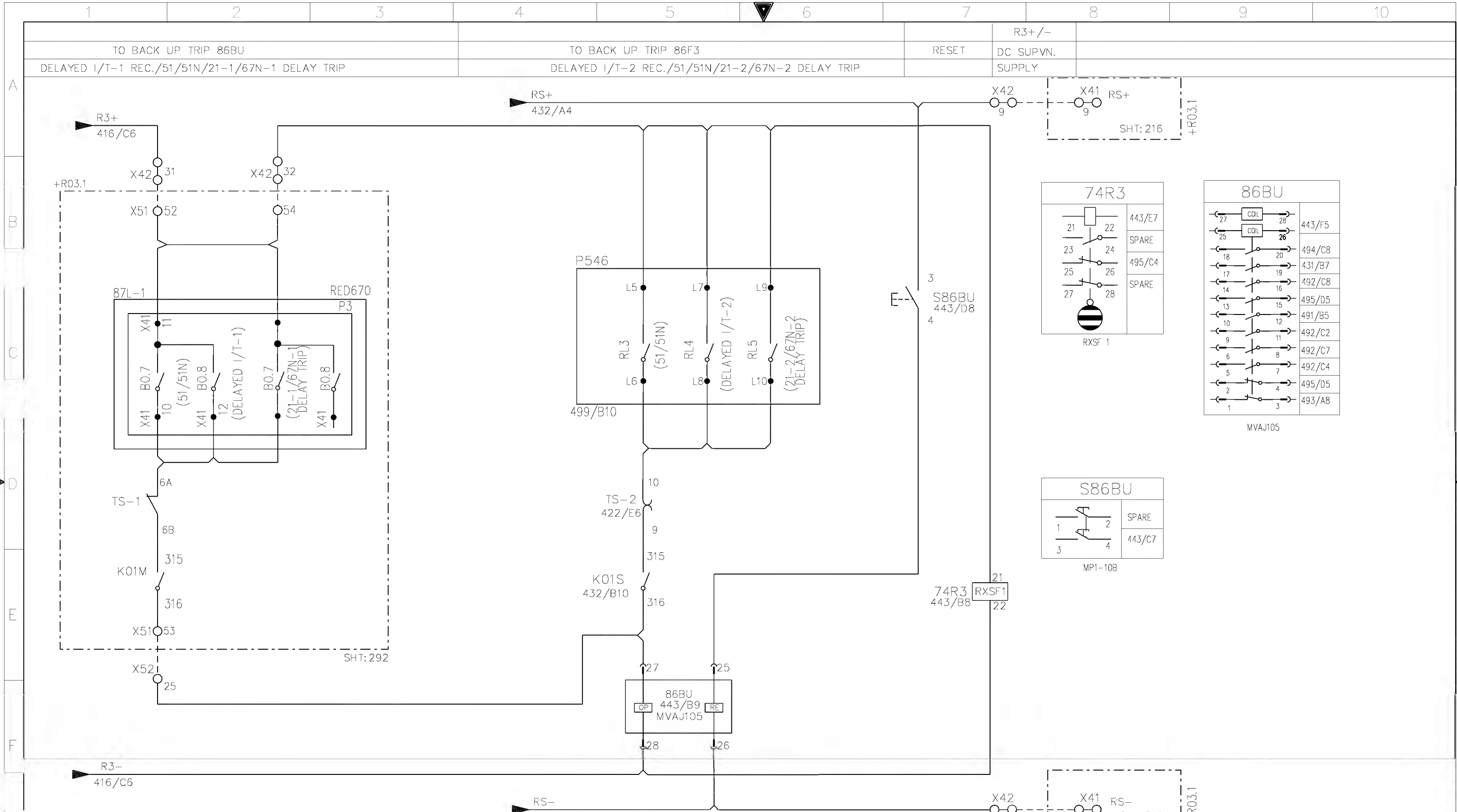
COMMUNICATION CIRCUITS
132kV UGF-8710 RELAY PANEL-2 +R03.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		
National Grid sa		National Grid sa		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	SHT 423	CONT. 431
				01





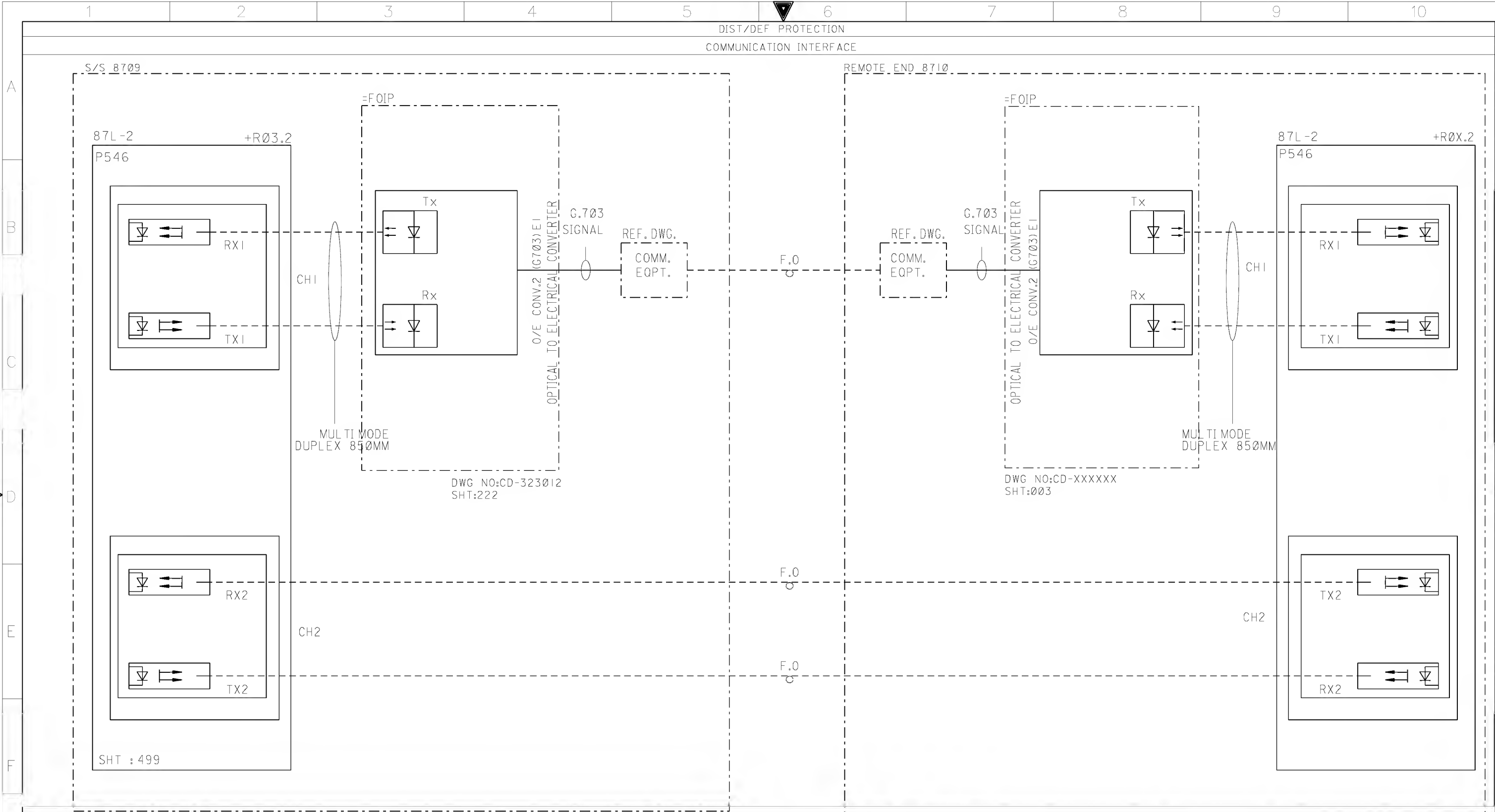
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

BACKUP PROTECTION TRIP RELAY CIRCUIT
132kV UGF-8710 RELAY PANEL-2 +R03.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid SA	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
				SHT	CONT.
-	C421	CD-322919		443	446
				REV. NO.	
				01	



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 24.01.2013 DATE COMPLETED _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

COMMUNICATION INTERFACE

132kV UGF-8710 RELAY PANEL-2 +R03.2

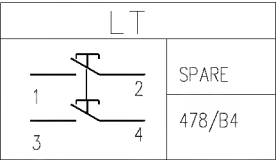
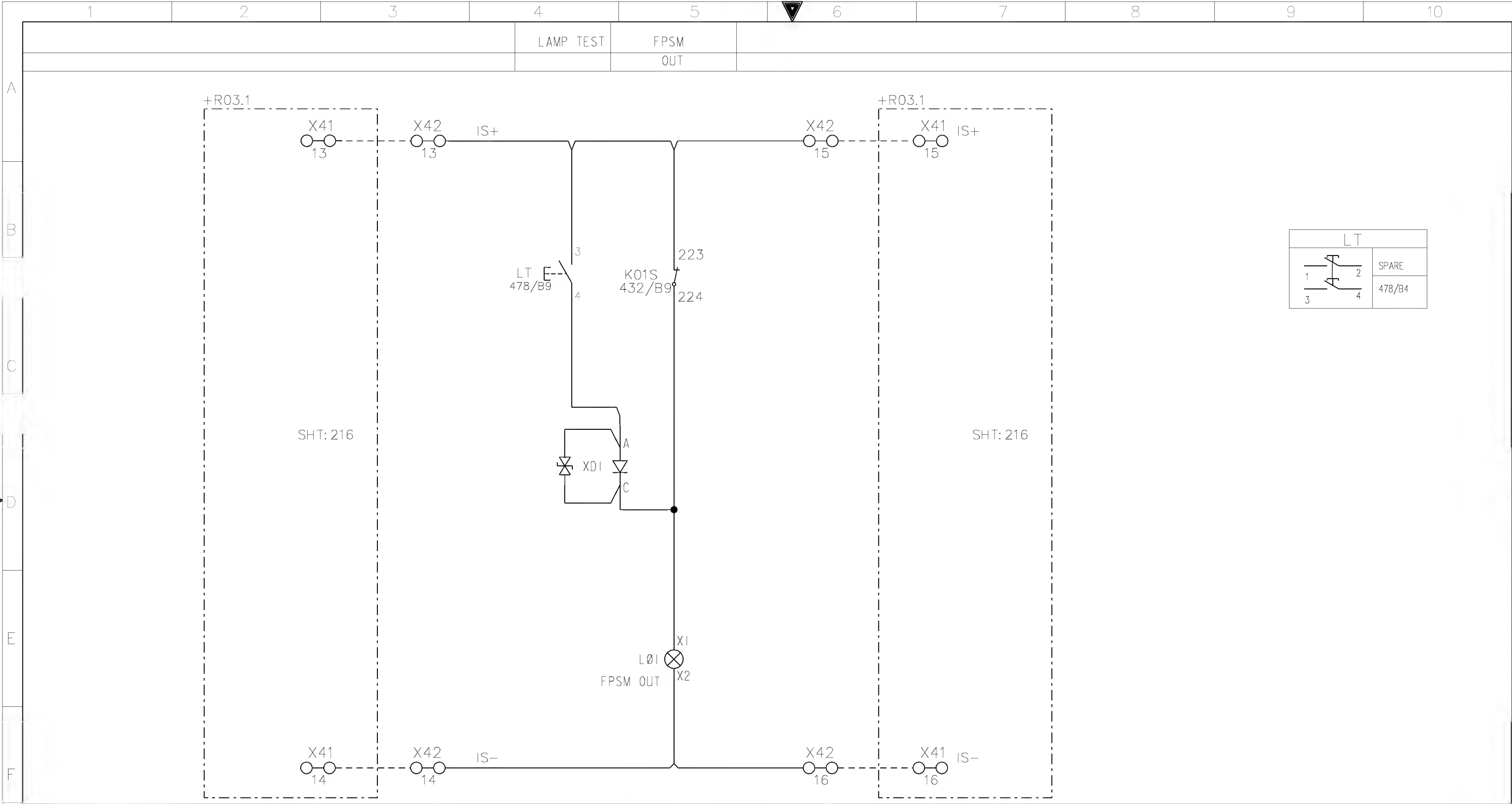
S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	SHT 446	CONT. 478
				01



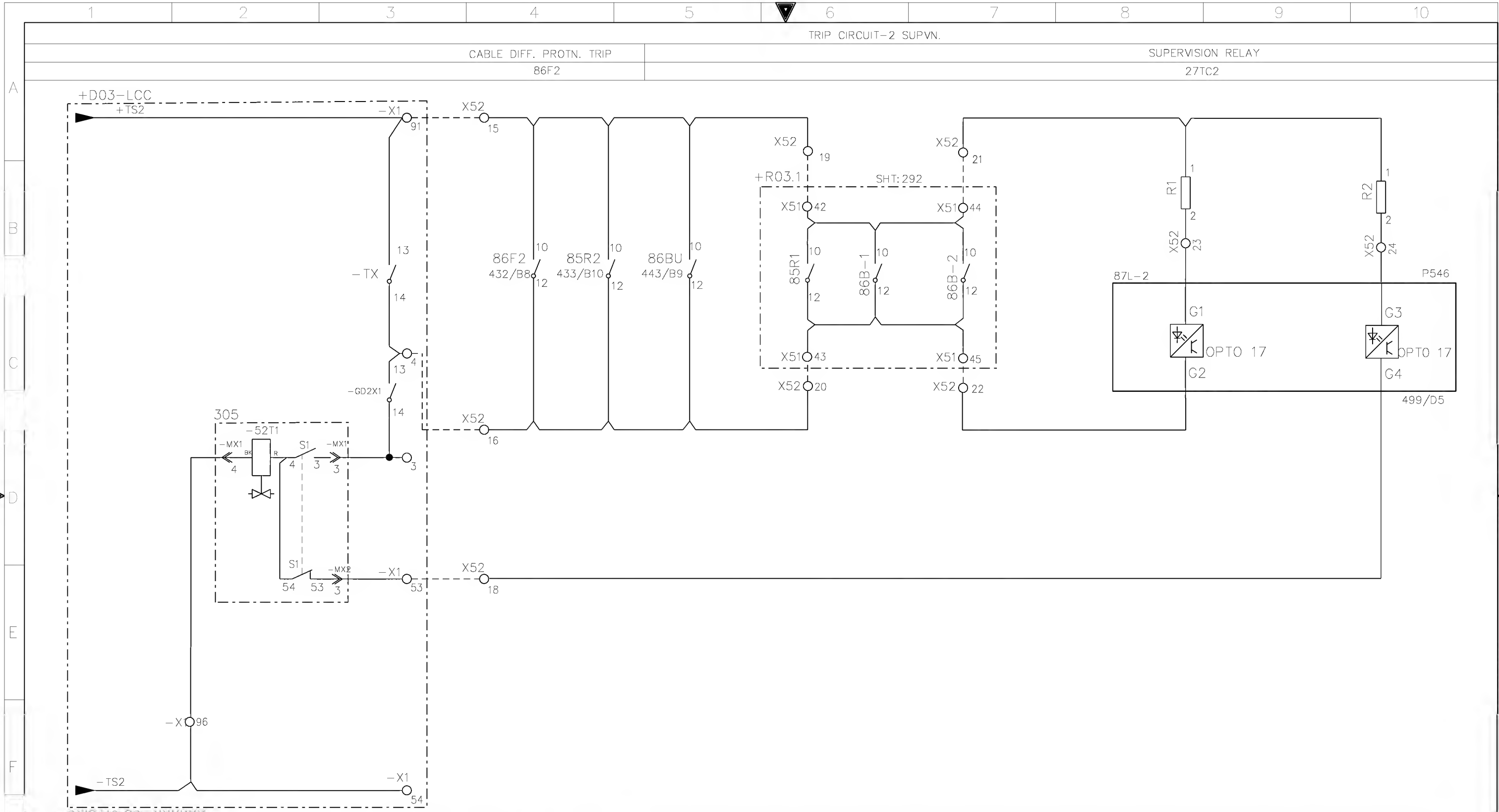
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR
DATE STARTED 24.01.2013 DATE COMPLETED _____
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

MAIN-2 INDICATION CIRCUIT
132kV UGF-8710 RELAY PANEL-2 +R03.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO. REV. NO.	
-	C421	CD-322919	SHT 478	CONT. 491 01



DWG. NO. CD=XXXXXX
SHT. XX

+R03.2

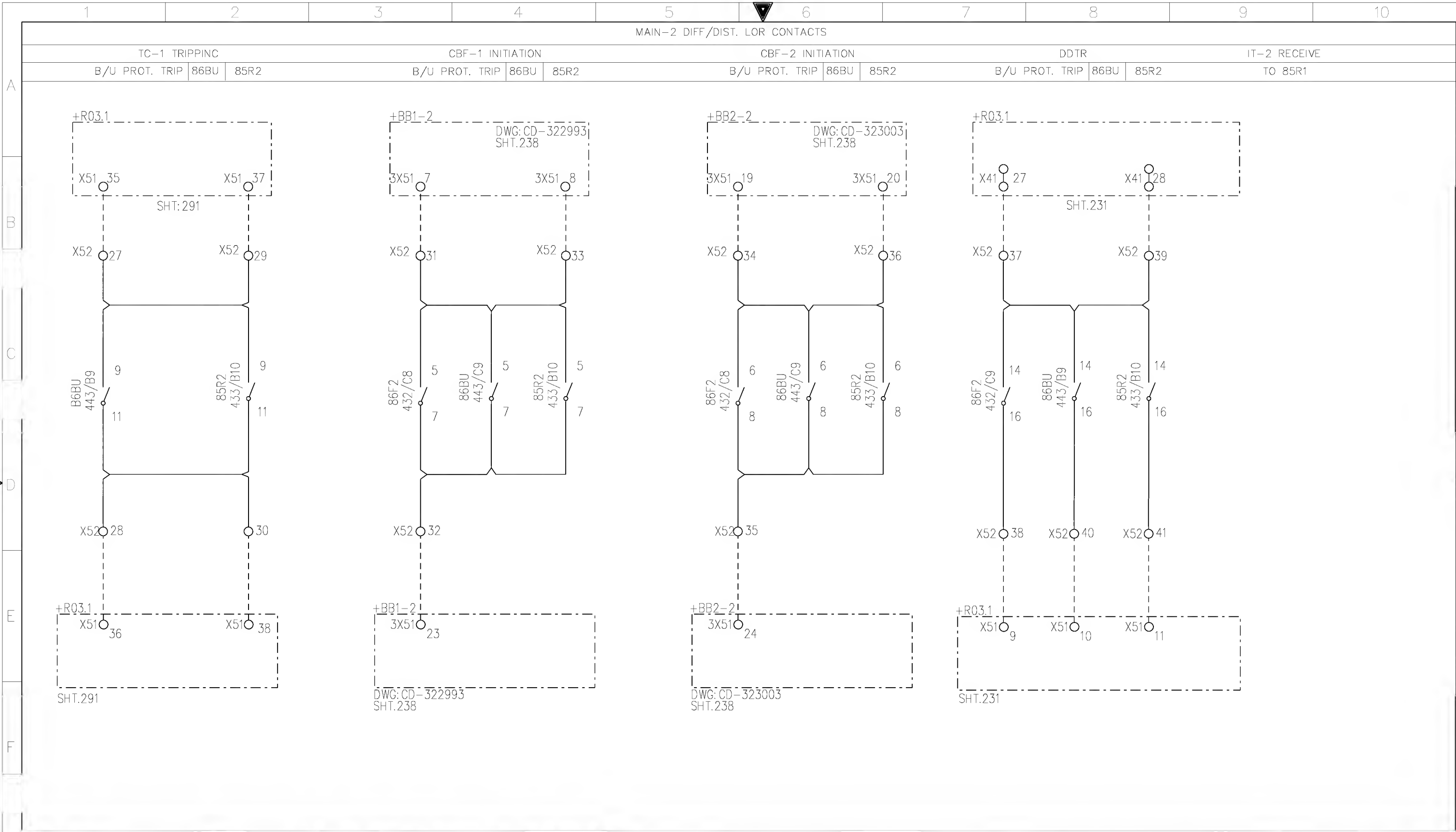
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656


01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

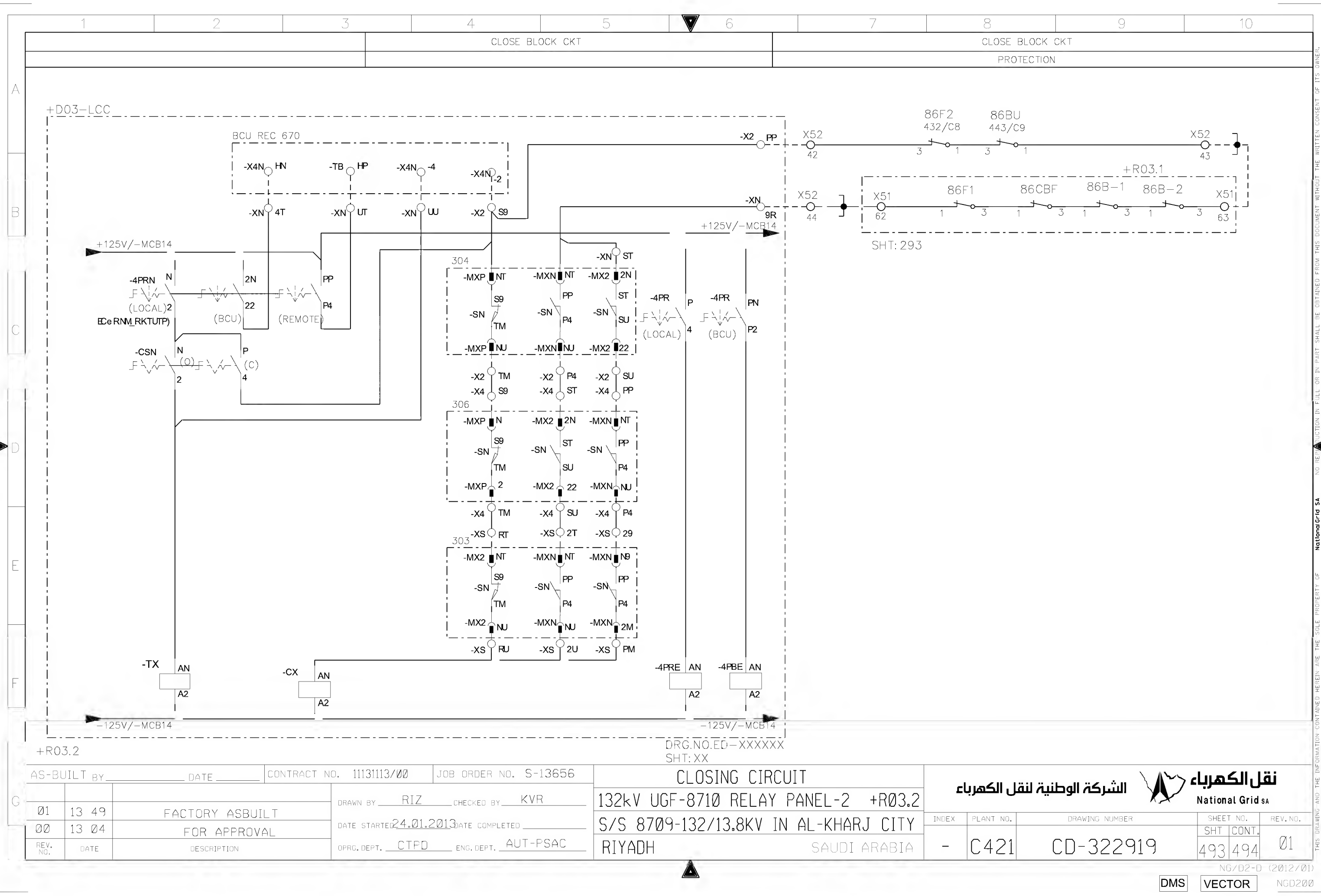
TRIP COIL-2 SUPERVSION CIRCUIT
132kV UGF-8710 RELAY PANEL-2 +R03.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	SHT 491	CONT. 492
				01



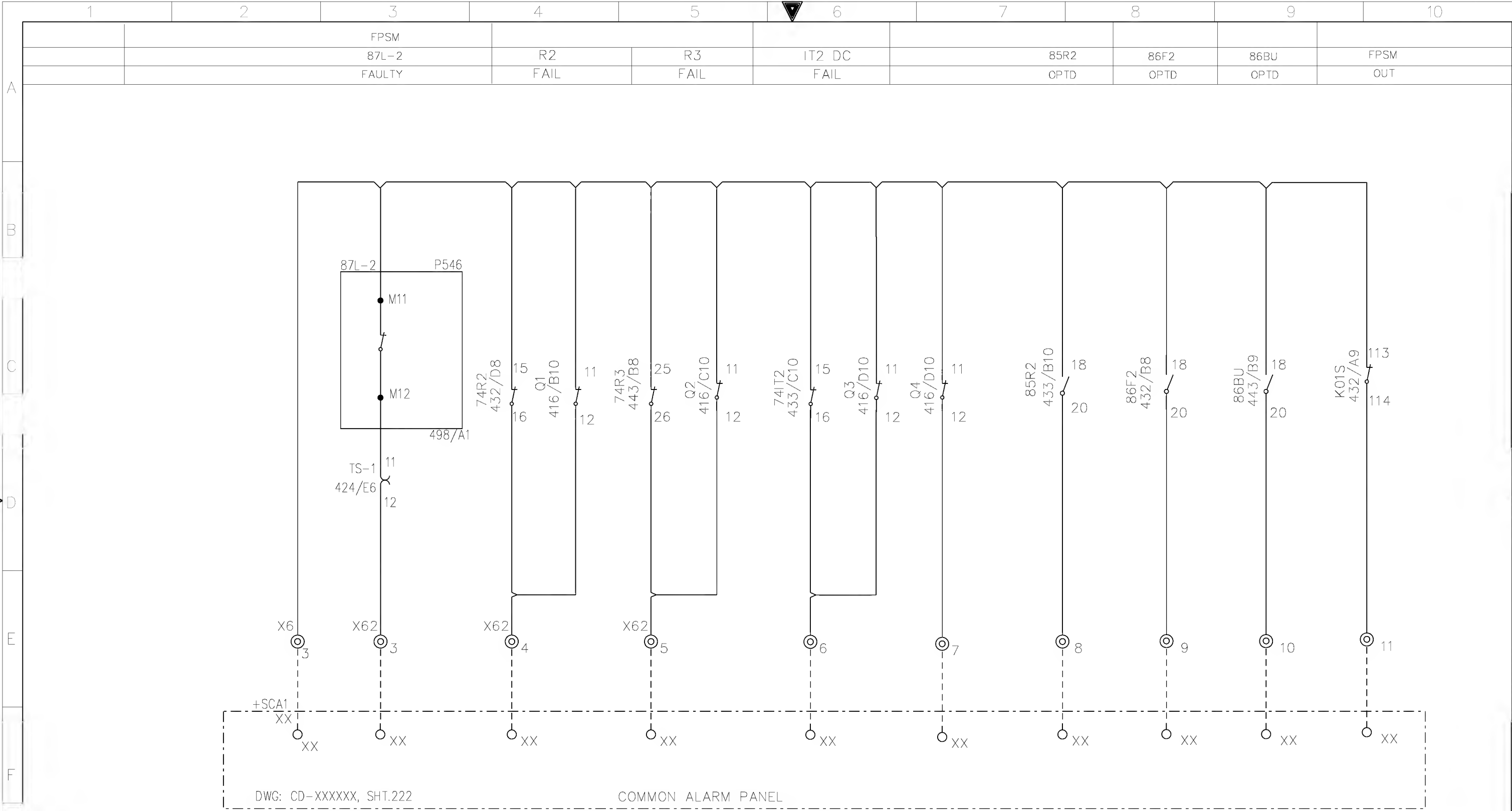
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TRIP COIL-1 & CBF INITIATION CONTACTS		الشركة الوطنية لنقل الكهرباء							نقل الكهرباء		
					DRAWN BY _____ RIZ _____ CHECKED BY _____ KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2							National Grid sa				
	01 13 49		FACTORY ASBUILT		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
	00 13 04		FOR APPROVAL		OPRG. DEPT. _____ CTFD _____ ENG. DEPT. _____ AUT-PSAC		RIYADH SAUDI ARABIA		-		C421		CD-322919		SHT 492 CONT. 493		01	



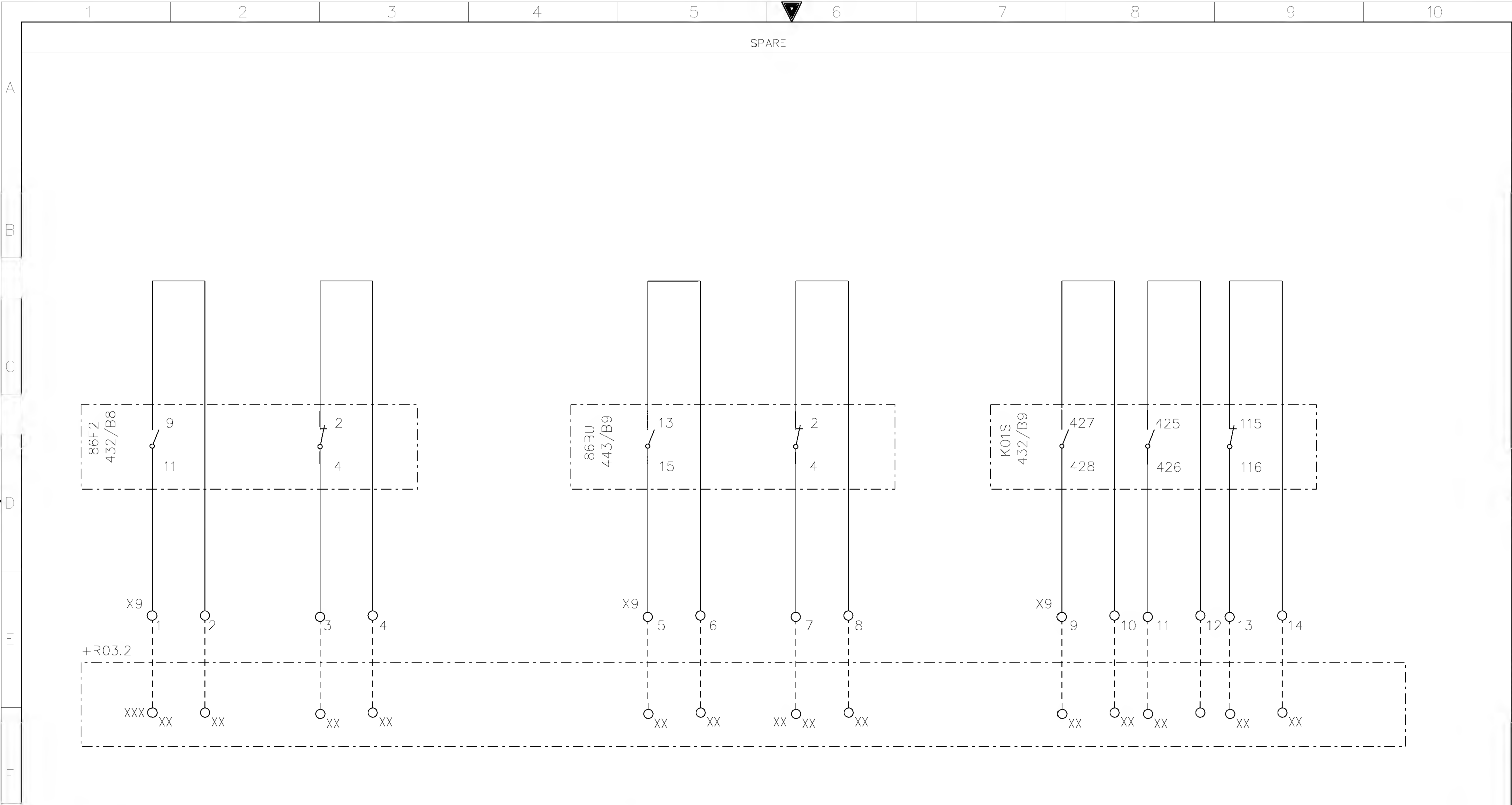
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	


CLOSING CIRCUIT	
132kV UGF-8710 RELAY PANEL-2 +R03.2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid SA	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
-	C421	CD-322919		SHT	CONT.
				493	494
				01	



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMON ALARM CIRCITS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>				
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2						
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY						
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA						
								INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
								-	C421	CD-322919	SHT 494 CONT. 495		01



G	AS-BUILT BY _____		DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		SPARE CONTACTS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء</div> <div>National Grid sa</div>						
	01	13 49	FACTORY ASBUILT FOR APPROVAL			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2							
	00	13 04				DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY							
	REV. NO.	DATE	DESCRIPTION			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH		SAUDI ARABIA					
										-	C421	CD-322919		SHT 495		CONT. 498	

A

B

C

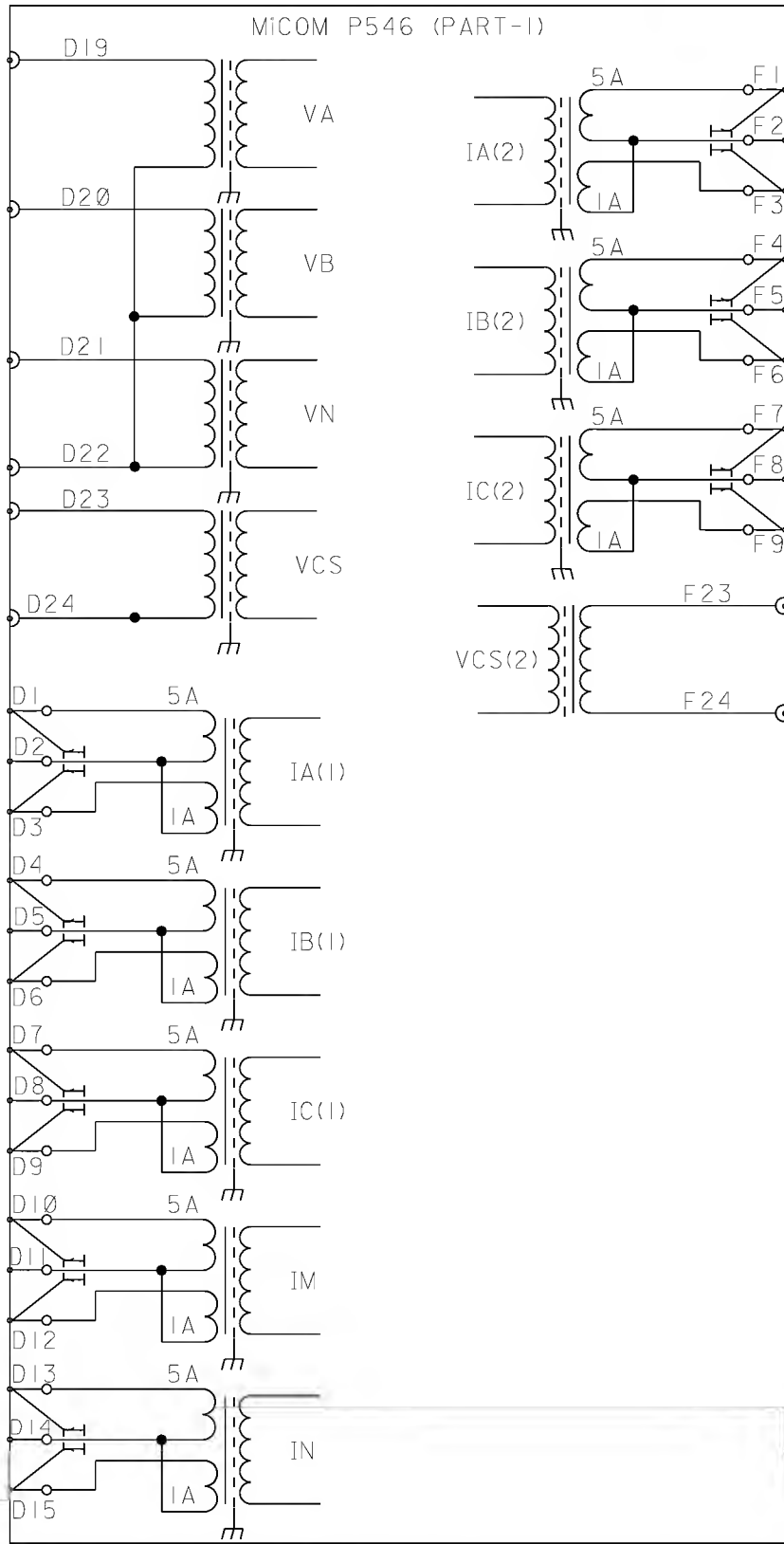
D

E

F

422/B9,C9

421/B8,C8,D8



NOTES:

(A)  C.T. SHORTING LINKS

(B)  PIN TERMINAL (P.C.B TYPE)

2, USED FOR SELF PROTECTION I_N SENSITIVE SHOULD BE DRIVEN FROM A CORE BALANCE CT WHEN SENSITIVE SETTINGS ARE USED

3, I_M INPUT IS FOR OPTIONAL MUTUAL COMPENSATION

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

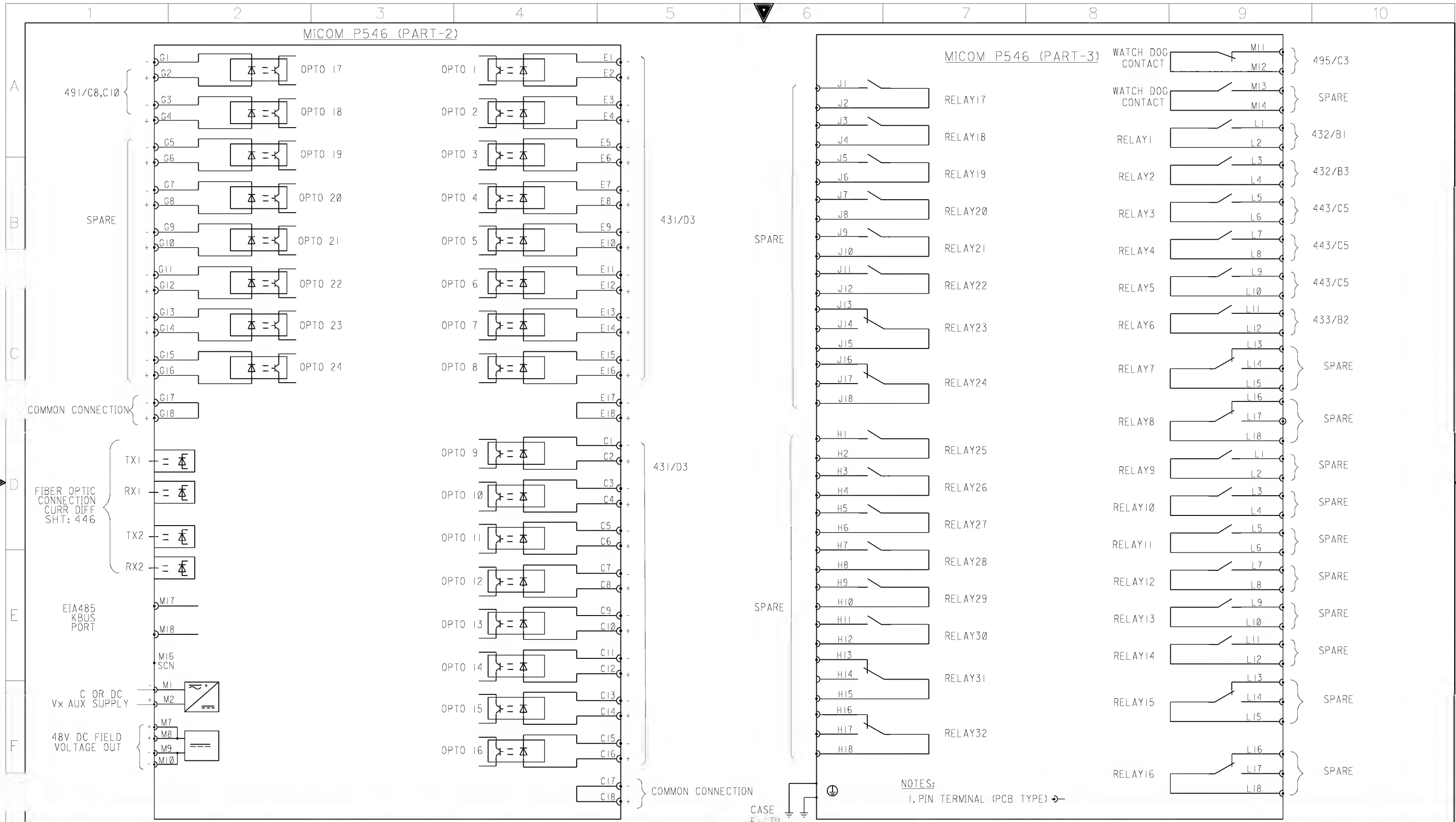
01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION


DRAWN BY RIZ CHECKED BY KVR
DATE STARTED 24.01.2013 DATE COMPLETED _____
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

BLOCK REFERENCE
132kV UGF-8710 RELAY PANEL-2 +R03.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322919	SHT CONT.	01
			498499	



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CLOSING CIRCUIT		<div> نقل الكهرباء National Grid sa</div> <div>الشركة الوطنية لنقل الكهرباء</div>									
			DRAWN BY <u> RIZ </u> CHECKED BY <u> KVR </u>		132kV UGF-8710 RELAY PANEL-2 +R03.2		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
01 13 49 FACTORY ASBUILT			DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		RIYADH		-		C421		CD-322919		SHT 499		CONT. 501	
00 13 04 FOR APPROVAL			OPRG. DEPT. <u> CTPD </u> ENG. DEPT. <u> AUT-PSAC </u>		SAUDI ARABIA												01	
REV. NO.			DATE			DESCRIPTION												

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										

REFERENCE	X1 CT CKT.			
421/C5	1			1
421/C5	2			2
421/C5	3			3
421/C5	4			4
421/D5	5			5
421/D5	6			6
421/D5	7			7
421/D5	8			8
421/E5	9			9
SPARE	10			10

REFERENCE	XTJ T.JACK			
411/C3	1			1
411/C3	2			2
411/D3	3			3
411/D3	4			4
SPARE	5			5

REFERENCE	XSH SPACE HEATER			
411/E6	1			1
411/F6	2			2
SPARE	3			3

REFERENCE	X6 ALM. CKT.			
412/C5	1			1
412/C5	2			2
495/E2	3			3

REFERENCE	X2 VT CKT.			
422/B6	1			1
422/B6	2			2
422/C6	3			3
422/C6	4			4
SPARE	5			5

REFERENCE	X3 AC CKT.			
411/A3	1			1
411/B3	2			2
411/A3	3			3
411/C3	4			4
411/B3	5			5
411/C3	6			6
411/B3	7			7
411/C3	8			8
SPARE	9			9
SPARE	10			10

REFERENCE	X62 ALM. CKT.			
412/E5	1			1
412/E5	2			2
494/E3	3			3
494/E4	4			4
494/E5	5			5
494/E6	6			6
494/E7	7			7
494/E8	8			8
SPARE	9			9
SPARE	10			10
SPARE	11			11
SPARE	12			12
SPARE	13			13
SPARE	14			14
SPARE	15			15

REFERENCE	X42 DC CKTS.			
416/B3	1			1
416/B3	2			2
416/B3	3			3
416/C3	4			4
416/C3	5			5
416/C3	6			6
432/A2	7			7
432/F2	8			8
443/A4	9			9
443/F4	10			10
SPARE	11			11
SPARE	12			12
478/B3	13			13
478/E3	14			14
478/B8	15			15
478/E8	16			16
416/E3	17			17
416/E3	18			18
SPARE	19			19
SPARE	20			20
431/B3	21			21
431/B4	22			22
431/B4	23			23
431/B5	24			24
431/B5	25			25
431/B6	26			26
431/B8	27			27
431/B9	28			28
SPARE	29			29
SPARE	30			30
443/A2	31			31

REFERENCE	X52 CONTROL & PROT N CKTS.			
416/F7	1			1
416/F7	2			2
431/D4	3			3
431/D4	4			4
431/D5	5			5
431/D6	6			6
431/D6	7			7
431/D7	8			8
431/D8	9			9
431/D8	10			10
432/C4	11			11
432/C4	12			12
443/F2	13			13
SPARE	14			14
491/A4	15			15
491/C4	16			16
491/E4	17			17
491/A6	18			18
491/C6	19			19
491/A7	20			20
491/C7	21			21
491/A8	22			22
491/B8	23			23
491/A10	24			24
443/B10	25			25
SPARE	26			26
492/B2	27			27
492/D2	28			28
492/B3	29			29
492/D3	30			30
492/B4	31			31
492/D4	32			32
492/B5	33			33
492/B6	34			34
492/D6	35			35
492/B7	36			36
492/B8	37			37
492/D8	38			38
492/B9	39			39
492/D9	40			40
492/A7	41			41
492/A10	42			42
492/B7	43			43
SPARE	44			44
SPARE	45			45
SPARE	46			46
SPARE	47			47
SPARE	48			48
SPARE	49			49
SPARE	50			50

REFERENCE	X9 SPARE			
495/E1	1			1
495/E2	2			2
495/E3	3			3
495/E3	4			4
495/E5	5			5
495/E5	6			6
495/E6	7			7
495/E6	8			8
495/E7	9			9
495/E8	10			10
495/E8	11			11
495/E8	12			12
495/E9	13			13
495/E9	14			14
SPARE	15			15
SPARE	16			16
SPARE	17			17
SPARE	18			18
SPARE	19			19
SPARE	20			20
SPARE	21			21
SPARE	22			22
SPARE	23			23
SPARE	24			24
SPARE	25			25

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

TERMINAL BLOCKS PANEL +R01.2
132kV UGF-8710 RELAY PANEL-2 +R03.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322919	SHT	CONT.	01
			501	NIL	